

# COIN SERVICE MANUAL

## VOLUME I

*(Coin Clott. manual)  
August 78 ID2  
Chart - 1-3  
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## **Coin Service Manual Vol I**

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# **COIN SERVICE MANUAL VOL I**

Printed in U. S. A.



## Introduction

This manual is a selected compilation of sections concerning installation and maintenance of coin stations.

Information not included in this manual may be found in standard BSP files.





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- 508-251-100      1      Coin Telephone Shelf — KS-19267
- 508-252-100      1      Coin Telephone Shelf — KS-20194
- 508-253-100      1      Coin Telephone Shelf — KS-19945
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- 508-820-100      3      KS-19207 Light and Blower Unit
- 508-825-100      4      KS-19261 Light Controls





**REPLACING PAGE ADDENDUM**

**Filing Instructions:**

1. REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.
2. INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.
3. PLACE THIS PINK SHEET AHEAD OF PAGE 1 OF THE SECTION.

**ADDENDUM 506-100-101**  
Issue 1, July 1972

**COIN TELEPHONE STATIONS**

**BACKBOARDS**

**1. GENERAL**

**1.001** This addendum supplements Section 506-100-101, Issue 1. The attached pages must be inserted in this section in accordance with the filing instructions above.

**1.002** This addendum is issued to change callout (Fig. 4) from 1A1 and 1C-type coin telephone

to 1-type and include installation dimension from top of backboard to floor level.

**2. IDENTIFICATION**

The following change applies to Part 2 of this section.

(a) Fig. 4—revised

**Attached:**

**Page 1—Revised July 1972**

**Page 2—Revised July 1972**



SEE ADDENDUM

## COIN TELEPHONE STATIONS BACKBOARDS

### 1. GENERAL

**1.01** This section provides identification and installation information for coin collector and coin telephone set backboards.

**1.02** Information in this section was previously contained in Section 506-110-105 which is hereby canceled.

### 2. IDENTIFICATION

#### (a) Ordering Guide:

##### (1) Multiuse Backboards:

CODE NO.	FIG. NO.
Backboard, 139A-3	1
Backboard, 144D	2
Backboard, 174A	3
Backboard, 178A-3	4

##### (2) Special Purpose Backboards:

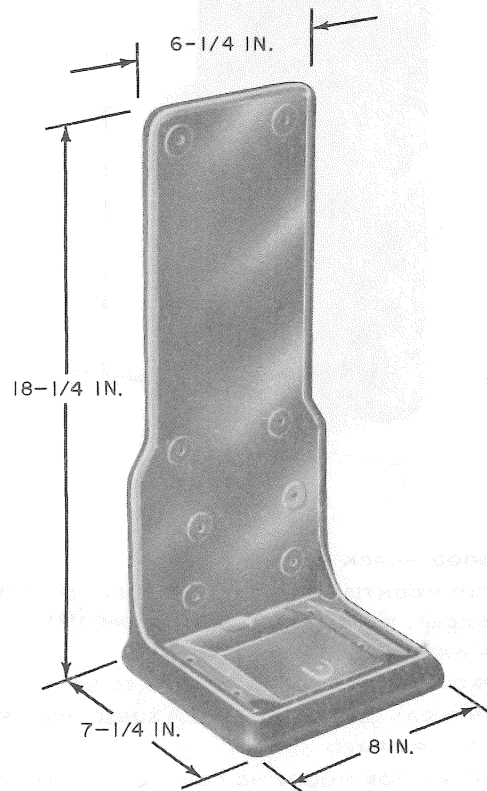
Backboard, 167A-3	5
Backboard Kit, KS-19206, List 6	6
Backboard Kit, KS-19206, List 7	7
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Backboard, KS-19340, List 54	10
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Backboard, B-190387-2	13

#### (3) Backboard Accessories:

CODE NO	FIG. NO.
Kit of Parts, D-179939	14
Kit of Parts, D-179940	15

#### (b) Design Features

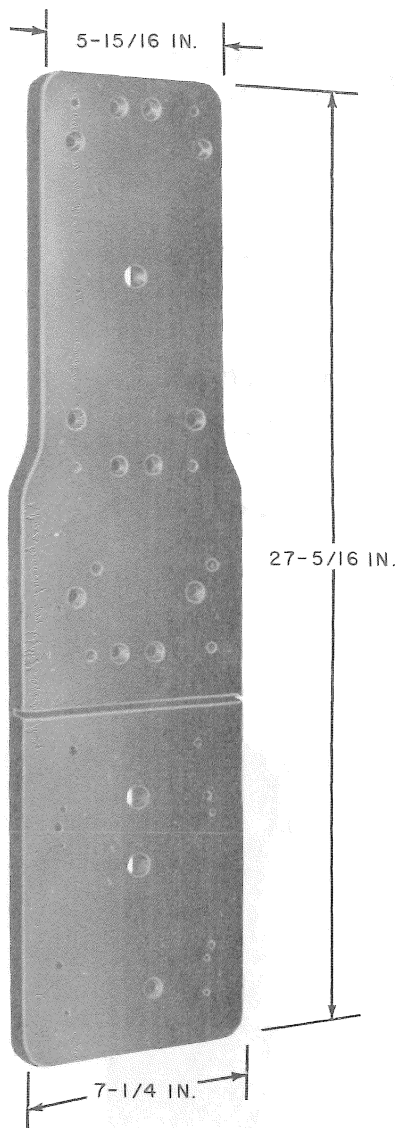
(1) Refer to Fig. 1 through 15.



- METAL BLACK
- FOR MOUNTING ALL 200-TYPE COIN COLLECTORS (EXCEPT PANEL TYPE) ON HORIZONTAL SURFACES
- SCREWS PROVIDED FOR MOUNTING COIN COLLECTORS

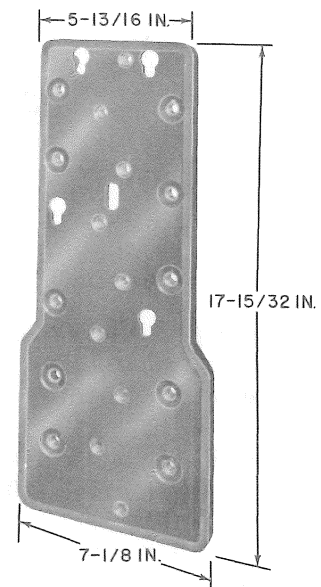
Fig. 1—139A-3 Backboard





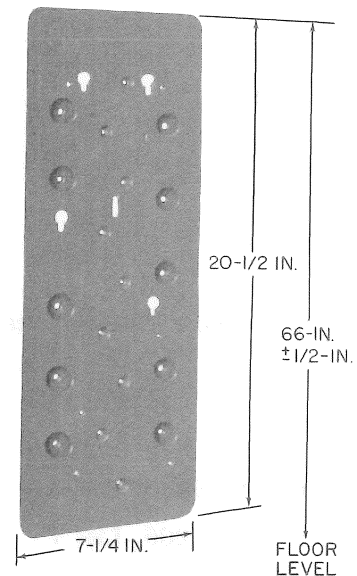
- WOOD, BLACK
- FOR MOUNTING ALL 200-TYPE COIN COLLECTORS (EXCEPT PANEL TYPE) AND A SUBSCRIBER SET ON A WALL AS ONE UNIT
- PROVIDED WITH A SAW SLOT SO BOTTOM PORTION CAN BE CUT OFF WHEN SUBSCRIBER SET IS NOT REQUIRED
- HOLES FOR MOUNTING COIN COLLECTORS ARE PROVIDED WITH 1/4-20 THREADED INSERTS
- REPLACES 144C BACKBOARD

**Fig. 2—144D Backboard**



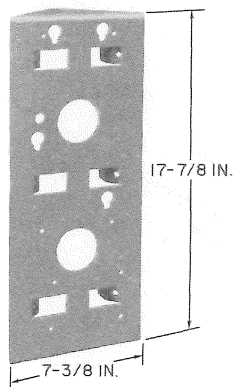
- ALUMINUM ALLOY, BLACK
- FOR MOUNTING ALL 200-TYPE COIN COLLECTORS (EXCEPT PANEL TYPE) ON A WALL

**Fig. 3—174A Backboard**



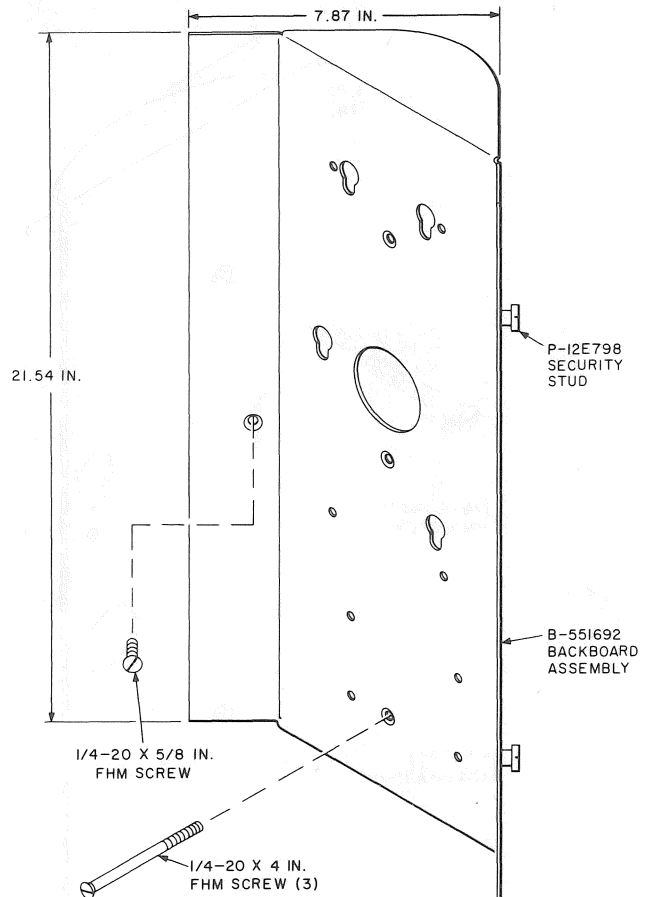
- ALUMINUM ALLOY, BLACK
- FOR MOUNTING 1-TYPE COIN TELEPHONES ON A WALL

**Fig. 4—178A-3 Backboard**



- 167A-3, METAL, BLACK, RATED A&M ONLY
- 167A-42, METAL, BIEGE, RATED MD
- FOR MOUNTING 200-TYPE COIN COLLECTORS (EXCEPT PANEL TYPE) IN 5-, 6-, 7-, 10-, OR 11-TYPE BOOTHS AND IN 20-TYPE SHELF
- PROVIDED WITH SCREWS FOR MOUNTING COIN COLLECTOR TO BACKBOARD
- REPLACES 153A-3 BACKBOARD

**Fig. 5—167A-3 Backboard**



- STEEL, OFF WHITE ENAMEL.
- FOR MOUNTING 200-, 1A-, AND 1C- TYPE COIN COLLECTORS (EXCEPT PANEL TYPE) IN KS-19206 BOOTH.
- PROVIDED WITH SCREWS AND SECURITY STUDS FOR MOUNTING BACKBOARD TO BOOTH.
- PROVIDED WITH SCREWS FOR MOUNTING COIN COLLECTOR TO BACKBOARD.

**Fig. 6—KS-19206, List 6 Backboard Kit**

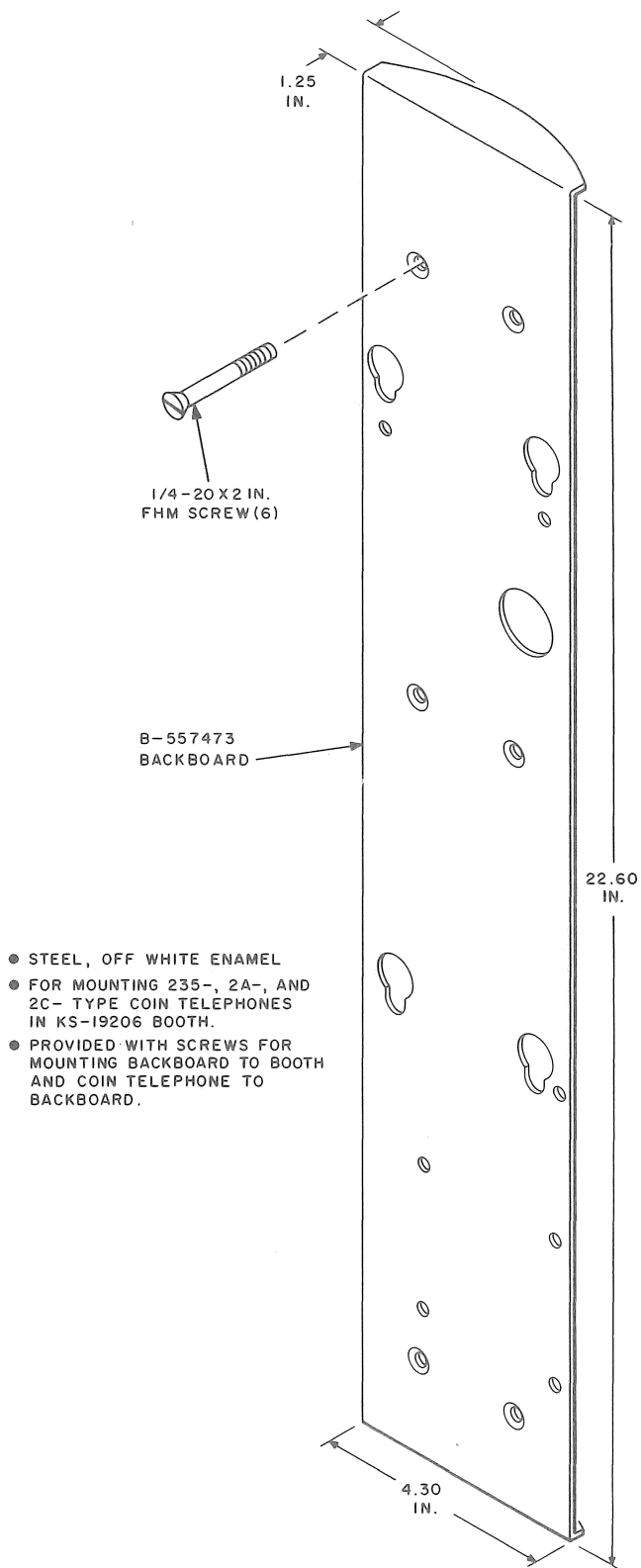


Fig. 7—KS-19206, List 7 Backboard Kit

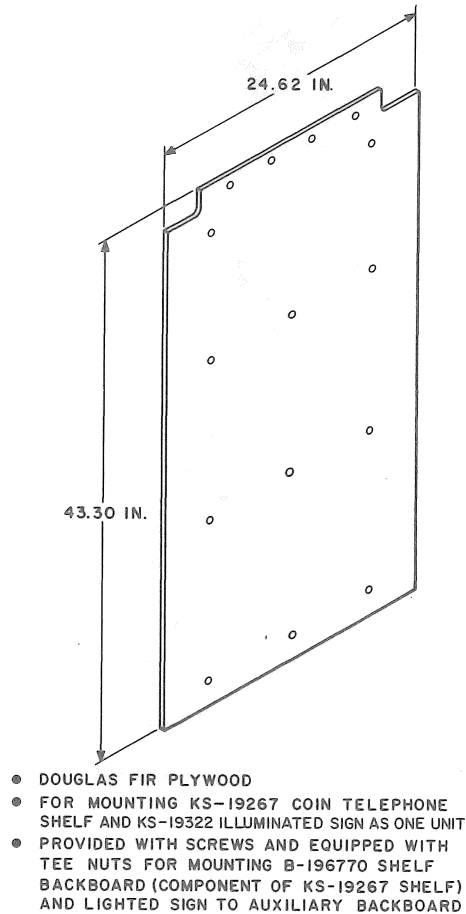


Fig. 8—KS-19267, List 10 Auxiliary Backboard

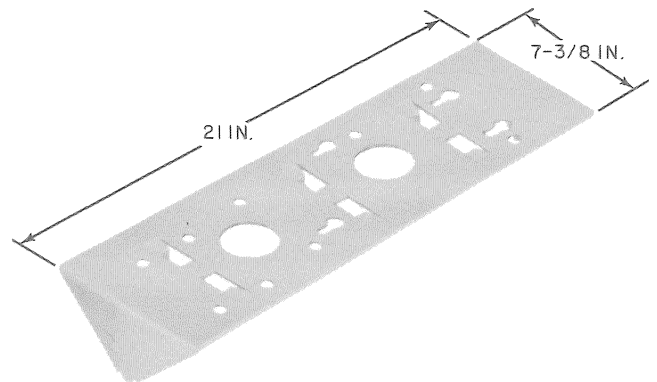
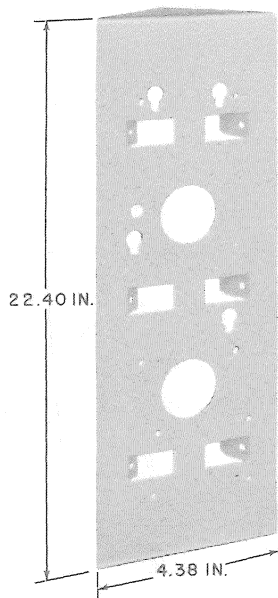
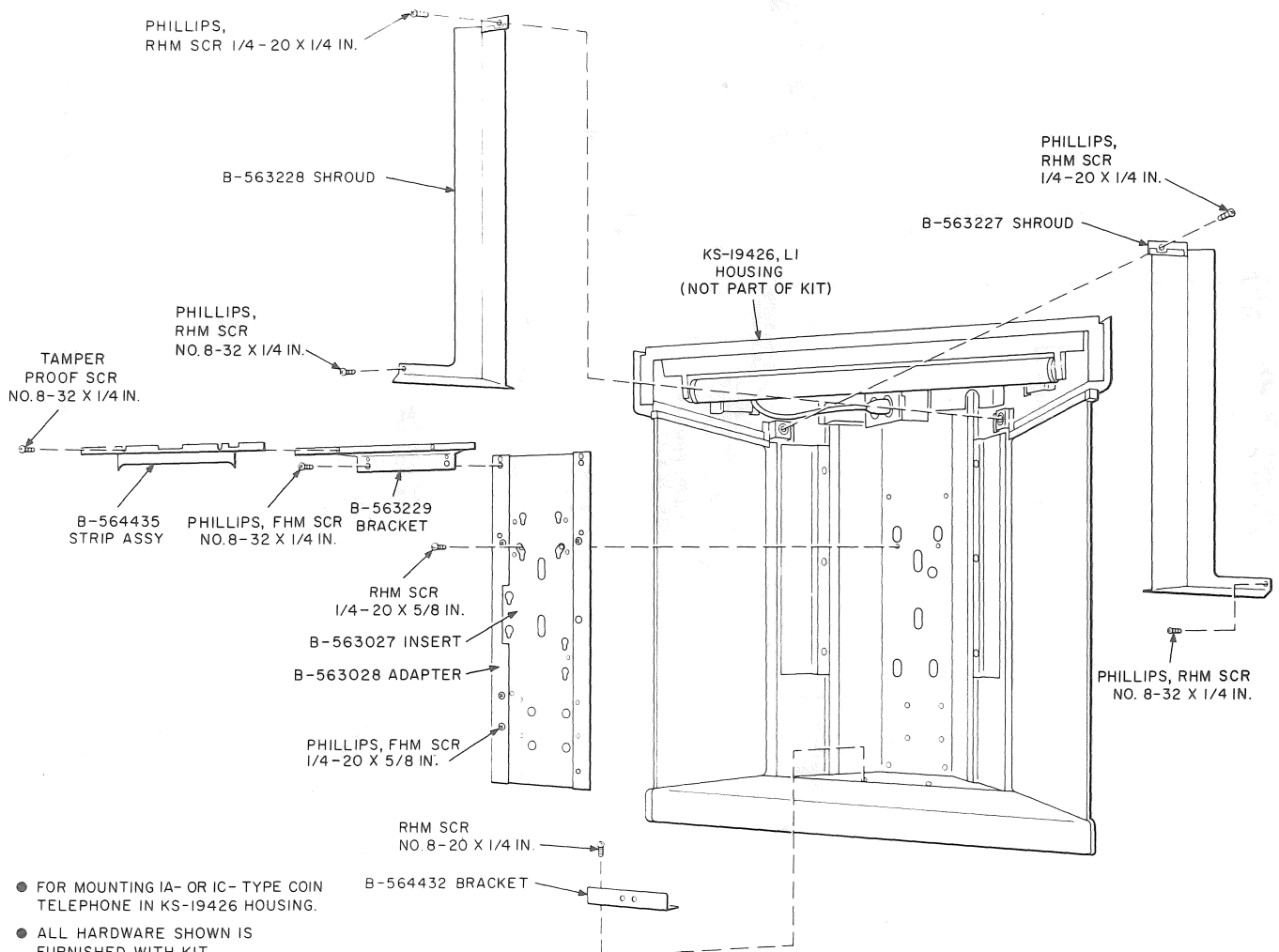


Fig. 9—KS-19340, List 53 Backboard



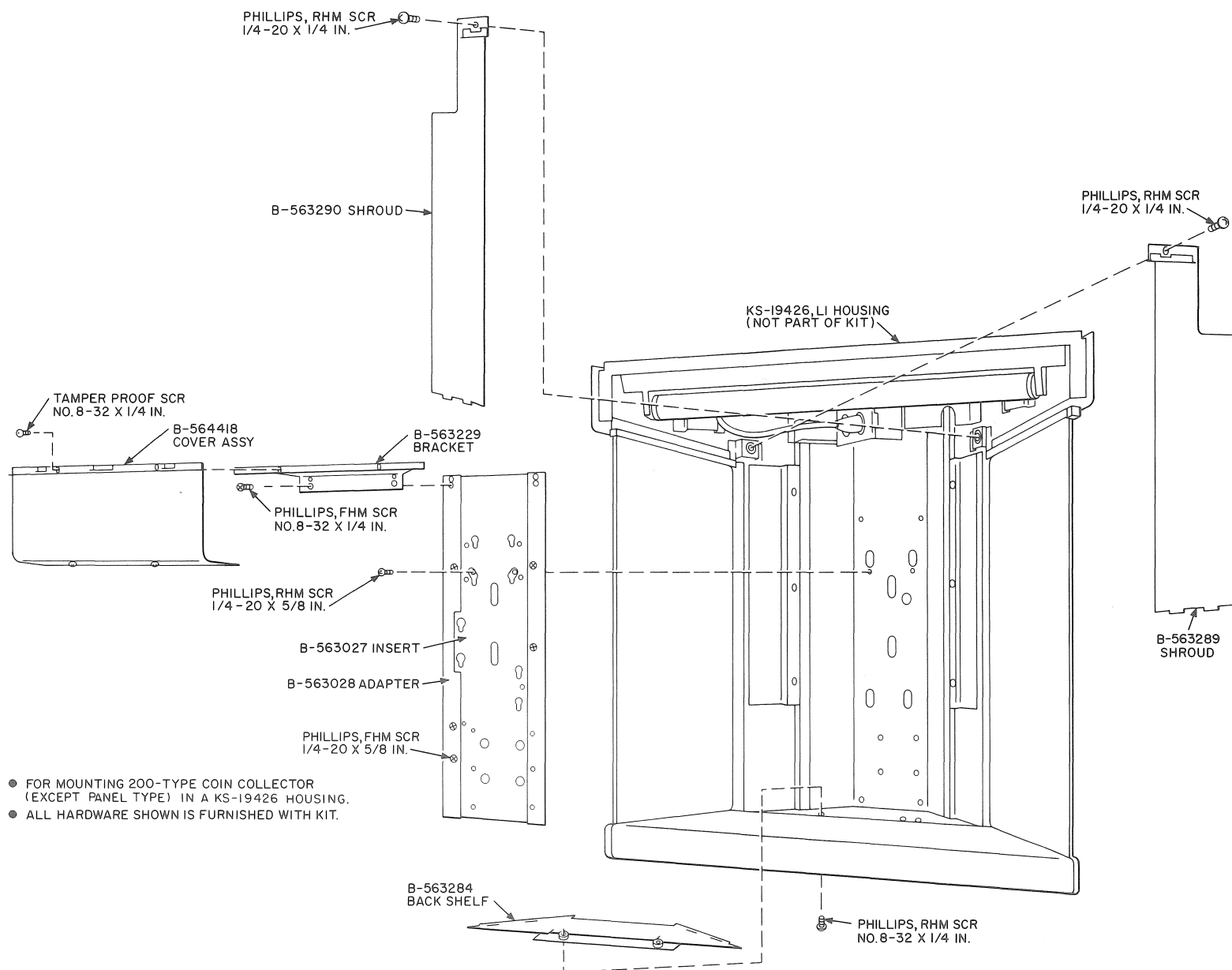
- STEEL, OFF-WHITE ENAMEL
- FOR MOUNTING 235-, 2A-, AND 2C-TYPE COIN TELEPHONE SETS IN KS-19340 AND KS-19442 BOOTHS

Fig. 10—KS-19340, List 54 Backboard



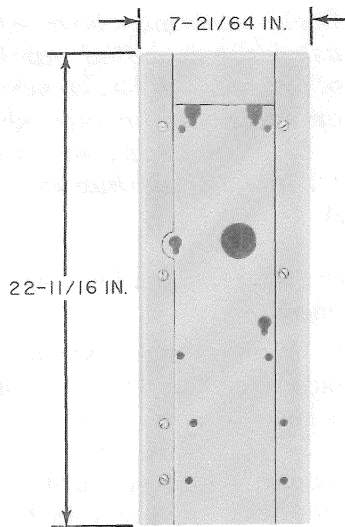
- FOR MOUNTING 1A- OR 1C- TYPE COIN TELEPHONE IN KS-19426 HOUSING.
- ALL HARDWARE SHOWN IS FURNISHED WITH KIT.

Fig. 11—KS-19426, List 7 Backboard Installation Kit



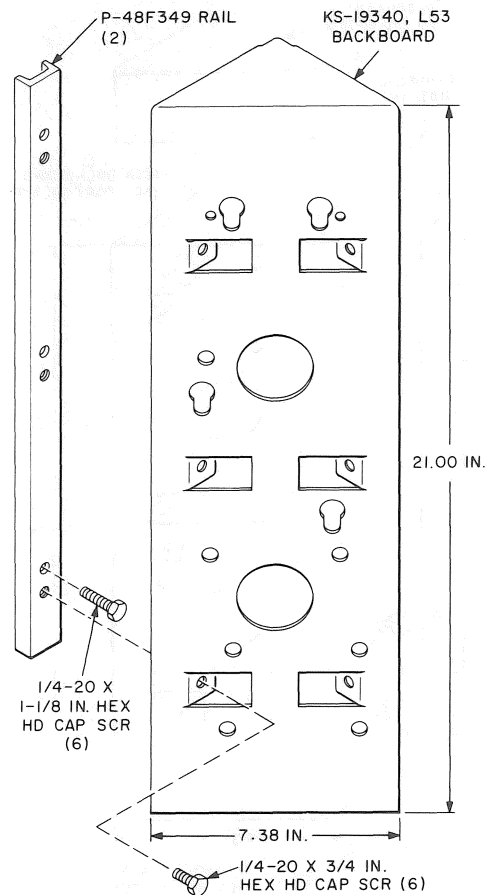
- FOR MOUNTING 200-TYPE COIN COLLECTOR (EXCEPT PANEL TYPE) IN A KS-19426 HOUSING.
- ALL HARDWARE SHOWN IS FURNISHED WITH KIT.

Fig. 12—KS-19426, List 8 Backboard Installation Kit



- ANODIZED ALUMINUM
- FOR MOUNTING 1A- AND 1C-TYPE COIN TELEPHONE SETS IN KS-16797 BOOTHS MANUFACTURED PRIOR TO JULY, 1963
- PROVIDED WITH SCREWS FOR MOUNTING COIN TELEPHONE TO BACKBOARD
- TWO B-650326 FILLER BLOCKS MUST BE ORDERED SEPARATELY TO PERMIT BOLTING THE BACKBOARD TO THE SIDE AND BACK CROSS RAILS

Fig. 13—B-190387-2 Backboard



- REPLACES I67A BACKBOARD FOR MOUNTING 1A- OR 1C-TYPE COIN TELEPHONE IN 10 AND 11-TYPE BOOTHS.
- ALL PARTS SHOWN ARE FURNISHED WITH KIT.

Fig. 14—D-179939 Kit of Parts

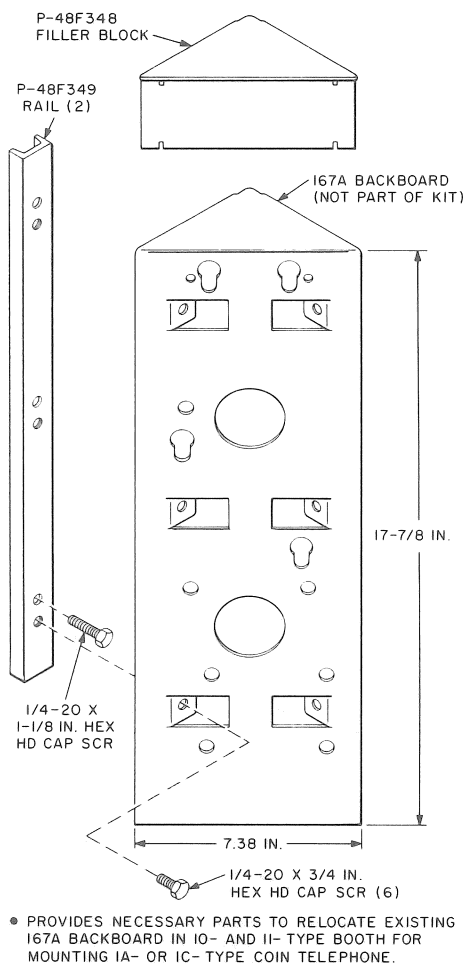


Fig. 15—D-179940 Kit of Parts

### 3. INSTALLATION

**3.01** Refer to Table A for proper fastening device and quantity to be used for each backboard dependent upon:

- Type of surface
- Strength and rigidity of base material



**Backboards must be mounted securely using the specified number and type of fasteners. If backboards are located on an uneven surface, shim to obtain a firm mounting and use fasteners 1/2-inch longer than specified in Table A.**

**3.03** Refer to 080 Division for method of installing fasteners.

**Note:** When fasteners extend into or through a surface, avoid damaging existing equipment and wiring.

**3.04** Backboards located outdoors should be secured with rustproof fasteners, such as galvanized screws or bolts.

**3.05** If backboard must be mounted on a finely finished surface, such as glazed tile or marble, that would be expensive to repair, consult supervisor and obtain instructions before proceeding.

#### 167A-3 Backboard (Fig. 5)

**3.06** When installing the 167A backboard it should be located in the right-rear corner of the booth with the top of the backboard 63 inches from the floor in booth without seat and 52.5 inches from the floor in booth with seat. Six 1/4-20 by 1-5/8 inch hex-head cap screws and 1/4-20 tee nuts are needed to secure the backboard to the booth.

#### KS-19267, List 10 Auxiliary Backboard (Fig. 8)

**3.07** The KS-19267, List 10 auxiliary backboard must be installed with the bottom edge 35.25 inches from the floor and 24.75 inches center to center when multiplied. Fasteners should be omitted in area between top of shelf and bottom of lighted sign.

**TABLE A**  
**FASTENERS USED IN MOUNTING BACKBOARDS**

BACKBOARD  TYPE	MOUNTING SURFACES					HOLE SIZE REQUIRED	FASTENERS	
	SOFT- WOOD	HARD- WOOD	MASONRY* (CONCRETE, BRICK)	PLASTER BOARD AND PLASTER ON LATH†	PLASTER ON CINDER BLOCK, HOLLOW TILE, METAL LATH		SIZE AND TYPE	QUANTITY (NOTE 1)
139A	•					1/8 or No. 30	1-3/4 inch No. 14 FH tapping screw	4
		•					1-1/4 inch No. 14 FH tapping screw	
			•			1/2	1/4-20 by 1-1/2-inch FH machine screw in 1/4 by 1-1/4-inch expansion shield	
144D, 174A, and 178A	•					1/8 or No. 30	1-3/4 inch No. 14 FH tapping screw	7
		•					1-1/4 inch No. 14 FH tapping screw	
			•			1/2	1/4-20 by 1-1/2-inch FH machine screw in 1/4 by 1-1/4-inch expansion shield	
				•		1/8 or No. 30	1-3/4 inch No. 14 FH tapping screw, secure in stud a minimum of 1 inch	6
					•	3/4	1/4- by 4-inch RH toggle bolt (Note 2)	
KS-19267, List 10 Auxiliary, B-196770 (Part of KS-19267 Shelf), and LP-480578 (Part of 19-type Shelf)	•					1/8 or No. 30	2-inch No. 14 RH wood screw	9
		•						
			•			5/8	5/16-18 by 2-3/4-inch RH machine screw P-182481 in 5/16 by 2-inch expansion shield	
				•		1/8 or No. 30	2-3/4 inch No. 14 RH wood screw (fas- tener must be imbedded in stud 1 inch)	
					•	1	5/16- by 4-inch RH toggle bolt (Note 2)	

\* When mounting on plastered masonry, install expansion shield below plastered surface by amount equal to thickness of plaster and use 1/2-inch longer machine screw than specified in Table.

† When mounting on plasterboard, plaster on lath, etc, fasteners must be embedded in stud at least 1 inch.

**Note 1:** Additional fasteners may be placed to ensure mounting.

**Note 2:** When using toggle bolts, cut off excess length.





## COIN TELEPHONE STATIONS

### TOOLS, GAUGES, AND MATERIALS

#### 1. GENERAL

1.01 This section covers the identification and use of those tools, gauges, and materials which may be required, in addition to those normally carried, to properly install, modify, or maintain coin collectors and coin telephone sets.

1.02 This section is reissued to add:

- 216B tool
- 787A tool
- Modified P-248585 release tool

1.03 The items listed in this section must be ordered separately as required.

#### 2. TOOLS

<u>NAME</u>	<u>NO.</u>	<u>FIG.</u>	<u>USE</u>	<u>REMARKS</u>
Tool	139B	1	Leveling coins	Read calibrated scale at top of slider
Tool	216B	2	Replace information plate assembly, TOUCH-TONE® dial number card, or terminate conductors on 123A1A protector or similar binding post terminals	Dual purpose wrench: 3/8-inch hexagon socket on one end; 7/16 inch-hexagon socket on other end
Tool	265C	3	Burnishing contacts	Consists of a chuck having a rubber handle and a magazine. Chuck will hold any No. 266-type tool. Furnished with three No. 266C and six No. 266E tools
Tool	376A	4	Viewing contacts	A magnifying mirror
Tool	466A	5	Adjusting contact springs	
Tool	528A	6	Cleaning out key slots of locks	Consists of two implements in a leather holder. Each implement consists of a piece of music wire with handle
Tool (2 req'd)	641A	7	To facilitate mounting No. 5 dials	An aligning guide
Tool	710A	8	Removing damaged switch-hooks from corner-mounted coin collectors	A hardened steel bar
Tool	719A	9	Opening of door and face-plate assembly (panel phones); removing cover unit assembly (1A-, 1C-type)	
Tool	787A	10	To release dimes jammed in coin chute of single slot sets	

## SECTION 506-100-103

<u>NAME</u>	<u>NO.</u>	<u>FIG.</u>	<u>USE</u>	<u>REMARKS</u>
Orange Stick	KS-6320	—	Removing stuck coins; tripping hopper trigger	
Nylon Brush	KS-13786	—	Cleaning coin return	
Brush	KS-14164	—	Cleaning washer reject mechanism	
Tool	KS-14995, List 3	11	Trap and vane release test	
Releaser	KS-16750, L4	12	Removing dial finger wheel; resetting totalizer	
Spring Hook	TP-75503	13	Assembling spring on pull bucket	
Release Tool	P-248585	14	Releasing 27A “key snatcher” lock	
	◆ Modified P-248585	15	Releasing 32A “key snatcher” lock ◆	
Sash Brush	No. 6	—	General cleaning	
Allen Wrenches	Assorted	—	Adjusting switchhook travel	
Center Punch	—	—	Removing and replacing pull bucket shaft	
Cold Chisel	1/2-in.	—	Removing plastic pull buckets	
Phillips Screw- driver	—	—	Adjusting coin relay	
Spirit Level	—	—	Vertical alignment of coin telephone set	
Spacer	P-12A745	16	Reducing upper housing vertical play	
Spacing Washer	P-297872	—	Reducing switchhook end play	Brass, .438 OD, .297 ID, .010 thk.
Cover Parking Tool	KS-20950, L1	17	To mount cover unit assembly of 1A/1C/1E-type coin telephone set to corner of housing and mounting plate assembly	Permits trouble shooting without use of P11C cord

<u>NAME</u>	<u>NO.</u>	<u>FIG.</u>	<u>USE</u>	<u>REMARKS</u>
<b>3. GAUGES</b>				
Feeler Gauges	131A	18	Adjusting armature travel	
Bias Margin Gauge	146A	19	Coin relay bias margin test	<b>For use on 2-coil coin relay</b>
Bias Margin Gauge	146B	20	Coin relay bias margin test	For use on single-coil relay
Gauge	147A	21	Checking the restoring capability and contact pressure of the coin relay in prepay multislot coin collectors	When mounted on the horizontal portion of the operating arm in front of the stop lugs by the full depth of the slot in the long end, the gauge will exert a torque of $70 \pm 2$ gram-inches on the operating arm in a coin relay.  When mounted on the switch lever by the three slots in the side, the gauge will exert torques on the switch lever corresponding to pressures of min. 3, min. 5, and max. 7 grams, respectively, on the spring contacts
Gauge	178A	22	Setting the position of the operating arm on coin collectors	Use with coin collectors having shaft-type switchhooks
Gauge	178B	22	Same as 178A	Use with coin collectors having pin-type switchhooks
<b>4. CORDS</b>				
Cord	P10B	23	Maintenance or testing of 236G and 1234G coin collectors with upper housing removed	
Cord	P11C	24	Maintenance or testing of single slot coin-telephone sets with cover unit assembly removed or door and faceplate assembly opened (Also use with 235G and 1235G coin collectors)	

## SECTION 506-100-103

<u>NAME</u>	<u>NO.</u>	<u>FIG.</u>	<u>USE</u>	<u>REMARKS</u>
Cord	P5M	25	Maintenance or testing of 200-type coin collectors with upper housing removed	
<b>5. MATERIALS</b>				
Aluminum Oxide Cloth	No. 320	—	Smoothing rough spots on fork slot on 2-coil relay	
Antiseize Compound	KS-19094, L1 or L2	—	Lock and screw threads	L1 is pre-mixed; L2 must be mixed on site.
Cotton Twill Cloth	KS-2423	—	General cleaning	
Form	E-4914	26	Out-of-service label	Packaged in books of 5
Form	KS-7991	27	Out-of-service sign	
Grease	KS-14774, L1	—	General lubrication	
Lead Pencil	2B or Softer	—	Lubricating switchhook and coin release mechanism	
Paper	KS-16601, L1	—	Cleaning	
Paper Clip	—	—	Dial shorting	
Petroleum Spirits	KS-7860	—	Cleaning	<i>Warning: Highly flammable. Use safety precautions while using.</i>
Pipe Cleaners	—	—	Cleaning coin gauges	
Sealing Compound	6824	—	Sealing bias adjustment screw on coin relay	
Tinnerman Clips	C-29313-012-445 or C-3412-020-38	—	Upper and lower housing ground clips	

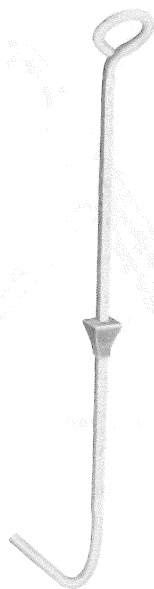


Fig. 1 - 139B Tool

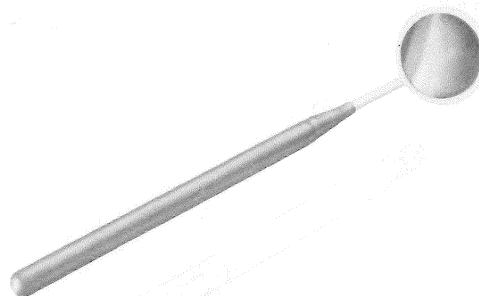


Fig. 4 - 376A Tool



Fig. 2 - 216B Tool

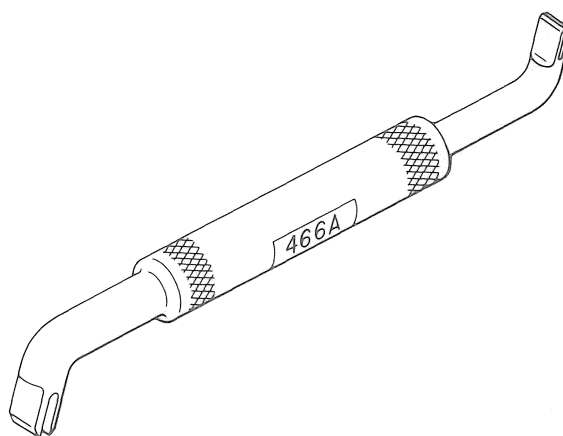


Fig. 5 - 466A Tool

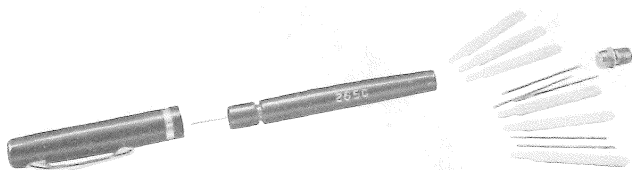


Fig. 3 - 265C Tool

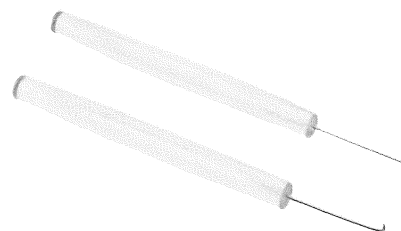


Fig. 6 - 528A Tool

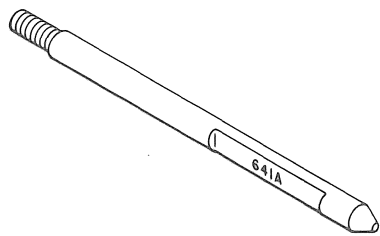


Fig. 7 – 641A Tool

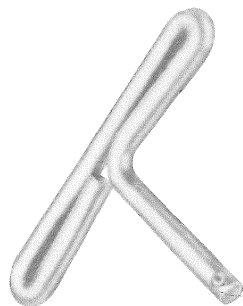


Fig. 9 – 719A Tool

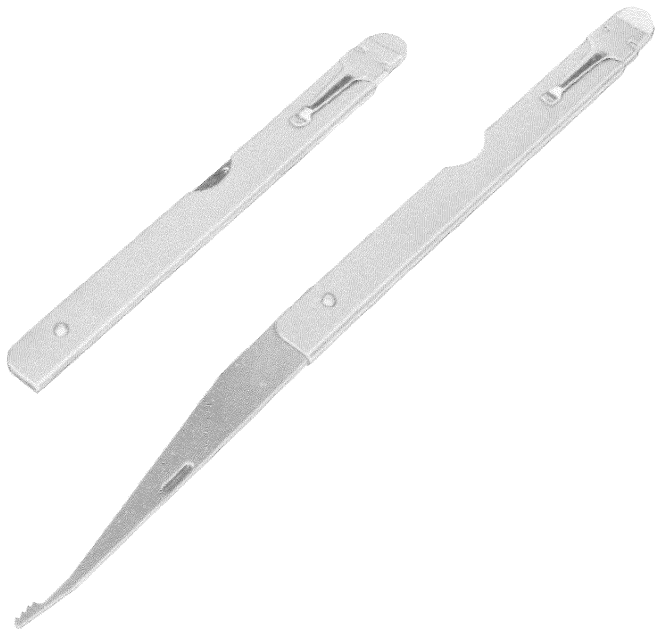
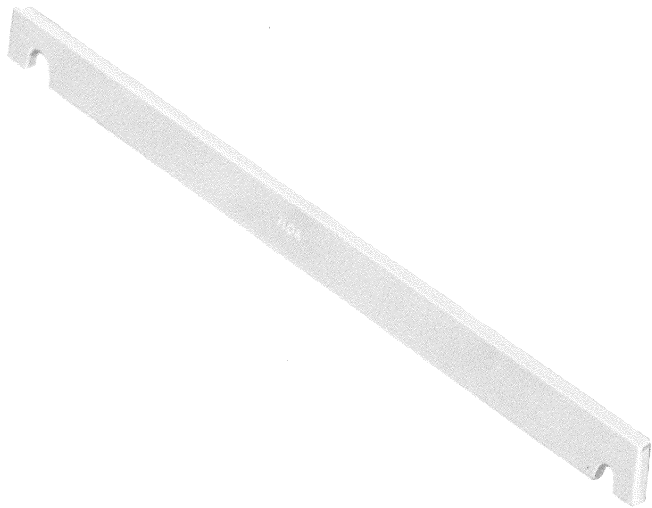


Fig. 10 – 787A Tool

MULTISLOT COIN COLLECTOR MAINTENANCE	SINGLE SLOT COIN TELEPHONE SET MAINTENANCE
INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket	INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket
COIN TESTS 5c, 10c, 25c Dial Tone, Coin Return Trouble Analysis	COIN TESTS 5c, 10c, 25c Dial Tone Coin Return On-Hook Coin Return Trouble Analysis
INSPECT INTERIOR Gauge, Connections Security Fasteners Housing Contacts	INSPECT INTERIOR Chute Assembly Connections, Plugs Switchhook
COIN CHUTE Dirt, Corrosion	COIN RELAY Bias Margin, Trap, Vane
SWITCHHOOK Spring, Pileups	RESISTANCE TESTS Loop, Ground
COIN RELAY Bias Margin, Trap, Vane	STATION WIRING Ground Connections Protector Booth Ground
RESISTANCE TESTS Loop, Ground	OPERATIONAL TESTS Coins Operator, Ring-Back
STATION WIRING Ground Connections Protector Booth Ground	INSPECT BOOTH Glass, Door, Lights Blower, Directories
OPERATIONAL TESTS Coins Operator, Ring-Back	KS-14995 L3 TOOL
INSPECT BOOTH Glass, Door, Lights Blower, Directories	

Fig. 11 – KS-14995, List 3 Tool



Fig. 12 – KS-16750, List 4 Releaser

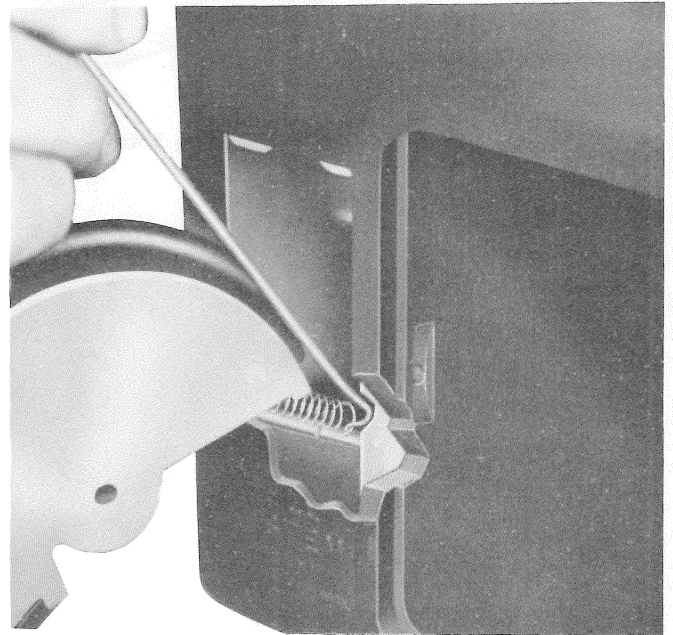


Fig. 13 – TP-75503 Spring Hook

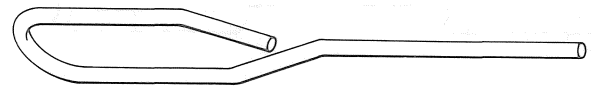


Fig. 14 – P-248585 Release Tool





Fig. 15 – Modified P-248585 Release Tool

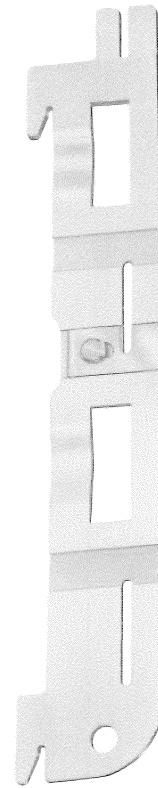


Fig. 17 – KS-20950, List 1 Cover Parking Tool

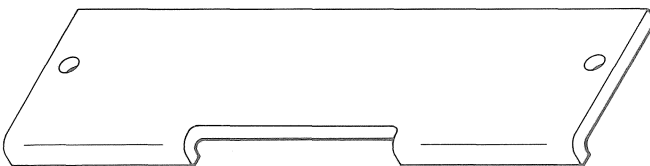


Fig. 16 – P-12A745 Spacer

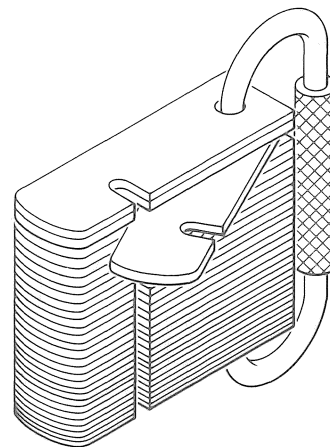


Fig. 18 – 131A Feeler Gauges

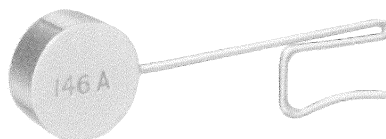


Fig. 19 – 146A Bias Margin Gauge

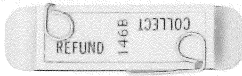


Fig. 20 - 146B Bias Margin Gauge

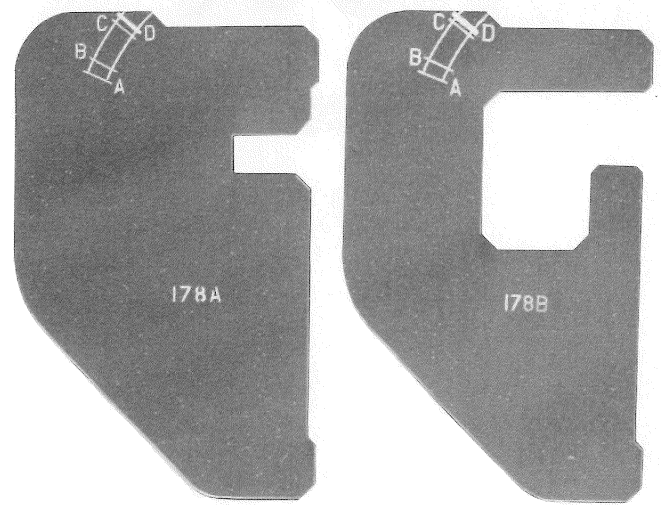


Fig. 22 - 178A and 178B Gauges

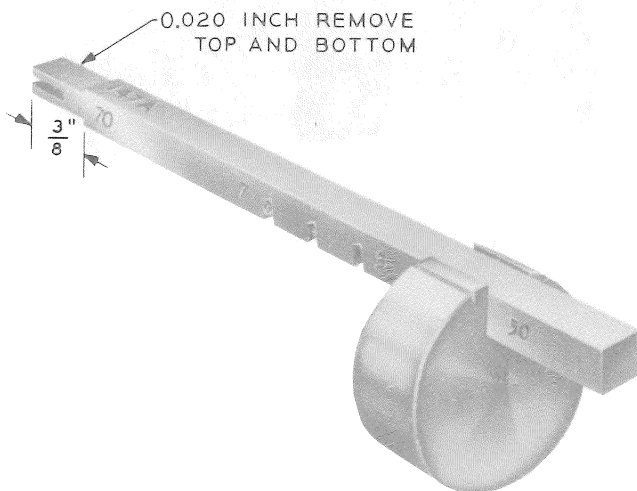


Fig. 21 - 147A Gauge

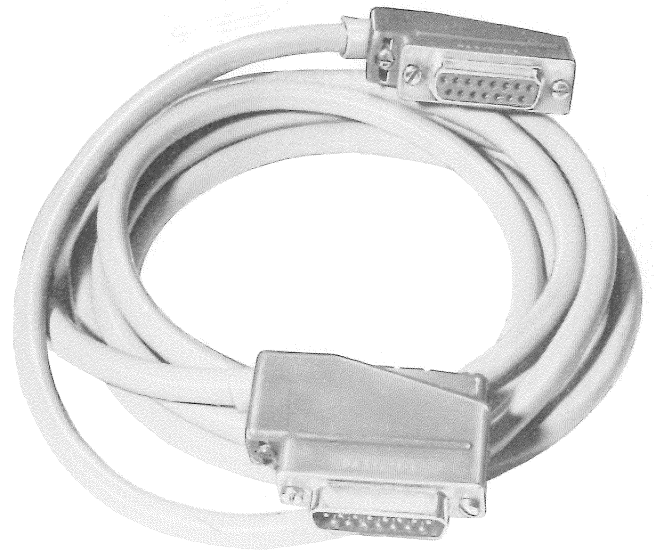


Fig. 23 - P10B Cord

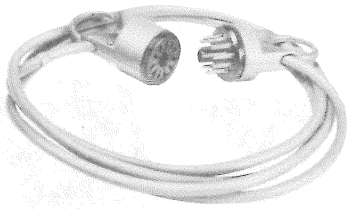


Fig. 24 – P11C Cord

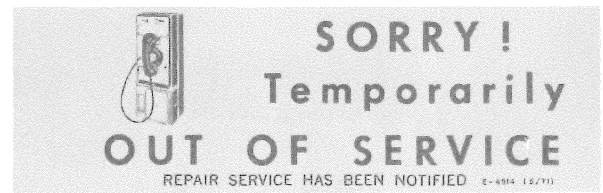


Fig. 26 – E-4914 Form

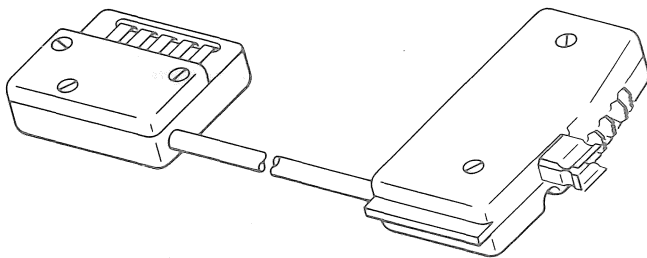


Fig. 25 – P5M Cord



Fig. 27 – KS-7991 Form, Rear View

## COIN TELEPHONE STATIONS

### COIN LEVEL DETECTOR

#### 1. GENERAL

**1.01** This section provides information on identification, installation, connections, operation, and maintenance of the coin level detector.

**1.02** Information in this section was formerly contained in Section 506-110-104 which is hereby canceled.

#### 2. IDENTIFICATION

**2.01** The coin level detector (CLD) is a device which provides a means for local or remote monitoring of the level of coins in the coin box of coin collectors and coin telephone sets with single coil relays.

**2.02** The components necessary to incorporate the CLD are furnished in three kits as follows:

(a) One D-180042 kit (Fig. 1) is required to modify each coin collector and each telephone set housing. The kit consists of a P-20F668 terminal board assembly, P-20F879 contact spring assembly with P-206518 hex nut (No. 8-32), a P-20F881 insulation strip, and a P-22F045 terminal board cover.

(b) One D-180110 kit (Fig. 2) is required to modify each coin box. The kit consists of a P-20F874 dual element sensor which clamps to the rear of the coin box.

(c) A 1E coin receptacle cover (Fig. 3) is also required for each coin box. The 1E cover is similar to the 1D (MD) cover except it is equipped with a contact stud.



*The 1E cover can be used with or without the CLD modification but the 1D cover cannot, consequently the 1D is rated MD.*

#### 3. INSTALLATION

**3.01** The following tools are necessary to perform the modification:

- 743A drilling template (Fig. 4)
- 1/4-inch drill\*
- Small C-clamp (2- to 3-inch)
- Flat file

\*Telephone housings equipped with KS-19277 locks pose an interference problem with the 1/4-inch drill. The shank of the drill can be no greater than 0.175-inch to permit drilling adjacent to the bolt fastener.

##### Modification of Coin Box

**3.02** Replace the 1D coin box cover with the 1E cover (Fig. 5).

**3.03** Clip the dual element sensor on the rear of the coin box (Fig. 5).

##### Modification of Coin Collectors and Coin Telephone Sets

**3.04** Install D-180042 kit in 200- and 1200-type coin collectors with single coil relays, and 1A/1C coin telephone sets as follows:

**Note:** Totalizer and coin chassis must be removed from 1A/1C coin telephone sets. Refer to 3.05(1) for removal.

(1) Remove the RH screw which secures the right front of the 1B rail to the lower housing.

(2) Install the 743A template against the right side of the base as shown in Fig. 6 and secure it with the screw removed in (1).

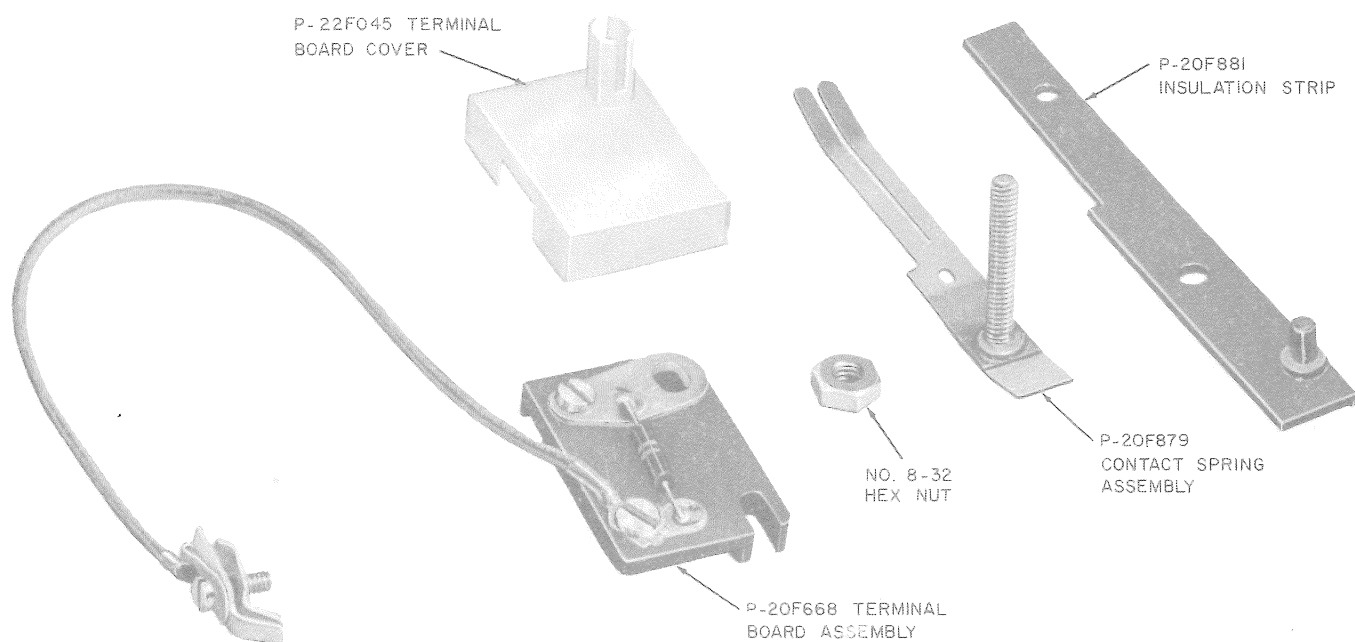


Fig. 1—D-180042 Kit

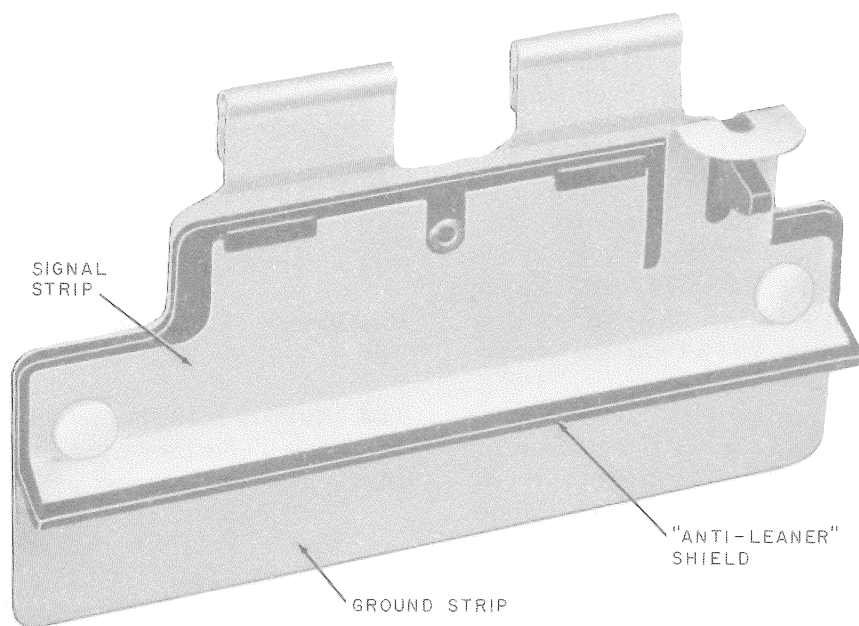


Fig. 2—D-180110 Kit

**Note:** The positioning tab of the template must be inserted in the con leveling hole.

- (3) Clamp the 1B rail to the housing during the drilling operation using the C-clamp described in 3.01.



**Cover the coin relay, hopper, and return chute with a piece of plastic, cloth, or other suitable material to prevent metal drill shavings from falling into these mechanisms.**

- (4) Using the 1/4-inch drill described in 3.01, drill the hole through the housing.
- (5) Remove the screw and drilling template.
- (6) Using the 1/4-inch drill, enlarge the hole where the screw was removed.
- (7) Using a suitable file, remove all burrs from the 1B rail.
- (8) Remove the C-clamp.
- (9) Remove all drill chips from the telephone set.
- (10) Position the insulation strip against the 1B rail with the boss on the strip in the 1/4-inch mounting screw hole (Fig. 7). Hold the contact springs in place with the stud extending through the hole drilled in the base, and fasten the terminal board in place on the housing base with the nut provided (Fig. 8).
- (11) Reinstall totalizer and coin chassis in 1A/1C coin telephone sets [See 3.05(7)].

### **3.05** Install D-180042 kit in 2A/2C coin telephone sets as follows:

- (1) Remove totalizer assembly and coin chassis as follows:
  - (a) Disconnect P2 from J2 and remove coin chute totalizer assembly.
  - (b) Disconnect (BK) and (Y) leads from coin relay and carefully pull leads through guide hole in hopper.
  - (c) Loosen chassis mounting captive screw.

- (d) Pull chassis out at bottom, slide down, and remove.

- (2) Using the contact spring mounting hole as a guide (Fig. 9) drill through coin rail with 1/4-inch drill.
- (3) Remove the RH screw which secures the right front of the 1B rail to the housing assembly.
- (4) Using the 1/4-inch drill, enlarge the hole where the screw was removed.
- (5) Using a suitable file, remove all burrs from the 1B rail.
- (6) Remove all drill chips from the telephone set.
- (7) Install totalizer assembly and coin chassis as follows:
  - (a) Install coin chassis using reverse of procedure (1).

**Note:** When installing chassis, dress inside wire behind chassis, allowing for sufficient wire to be connected to TB1 from right side as viewed from front of set.

- (b) Thread (BK) and (Y) leads of chassis through hole on coin hopper. Connect (BK) lead to terminal 3 and (Y) lead to terminal G of coin relay.
- (c) Install totalizer and connect P2 to J2. Ensure that green connector on top of totalizer is connected to the PP position.
- (8) Position the insulation strip against the 1B rail with the boss on the strip in the 1/4-inch mounting screw hole (Fig. 7). Hold the contact springs in place with the stud extending through the hole drilled in the base, and fasten the terminal board in place on the housing base with the nut provided (Fig. 8).

### **Replacing Coin Box**

- 3.06** Replace existing coin box with a modified coin box (Fig. 5).

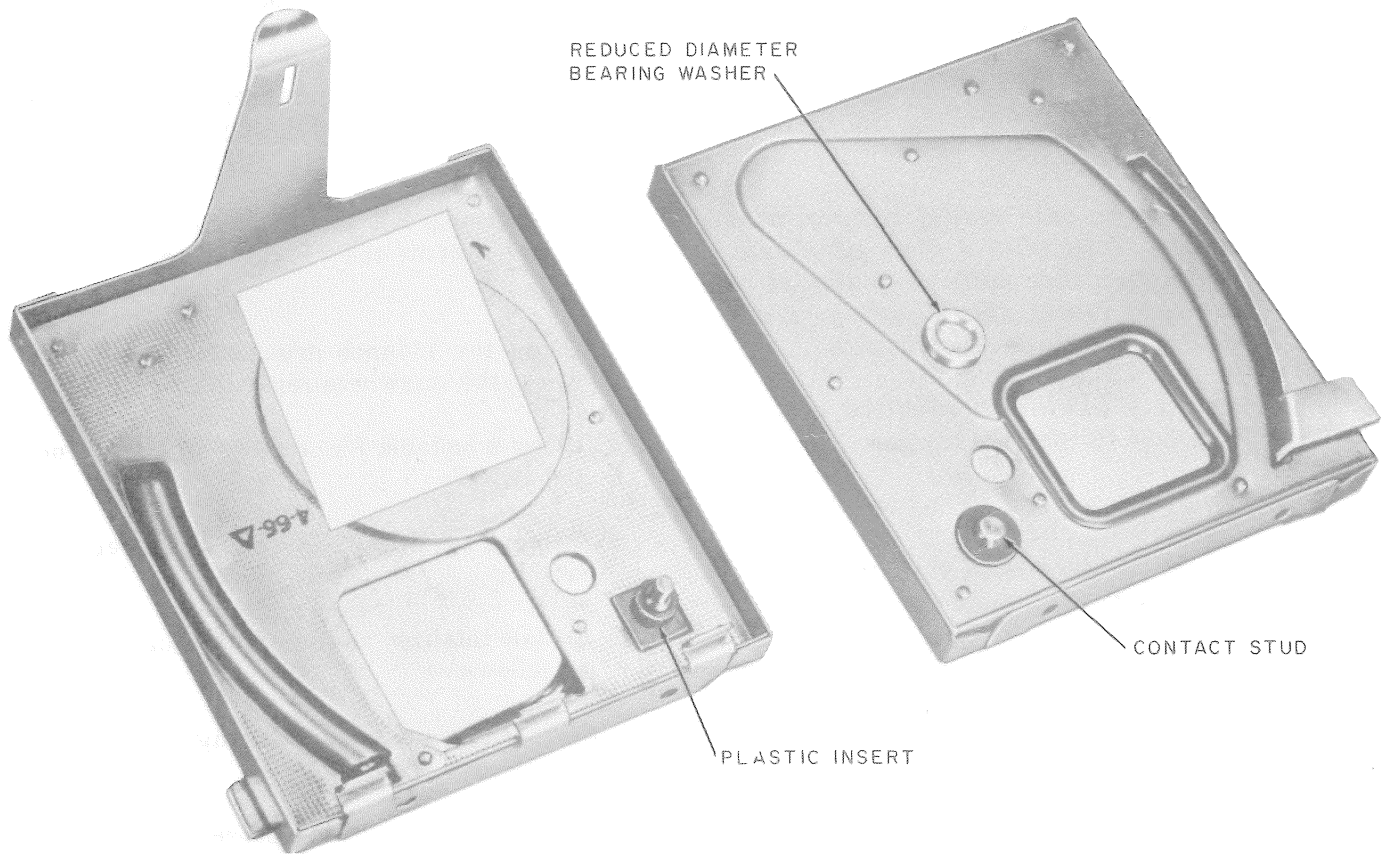


Fig. 3—IE Cover

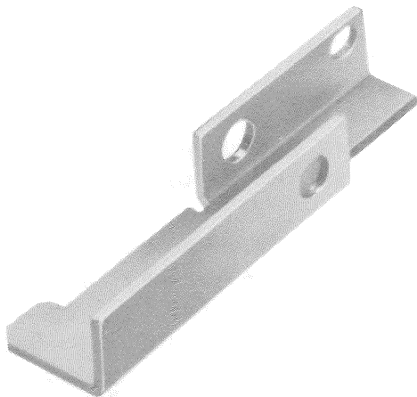


Fig. 4—743A Drilling Template

#### 4. CONNECTIONS

##### Remote Monitoring (Central Office Line Insulation Test)

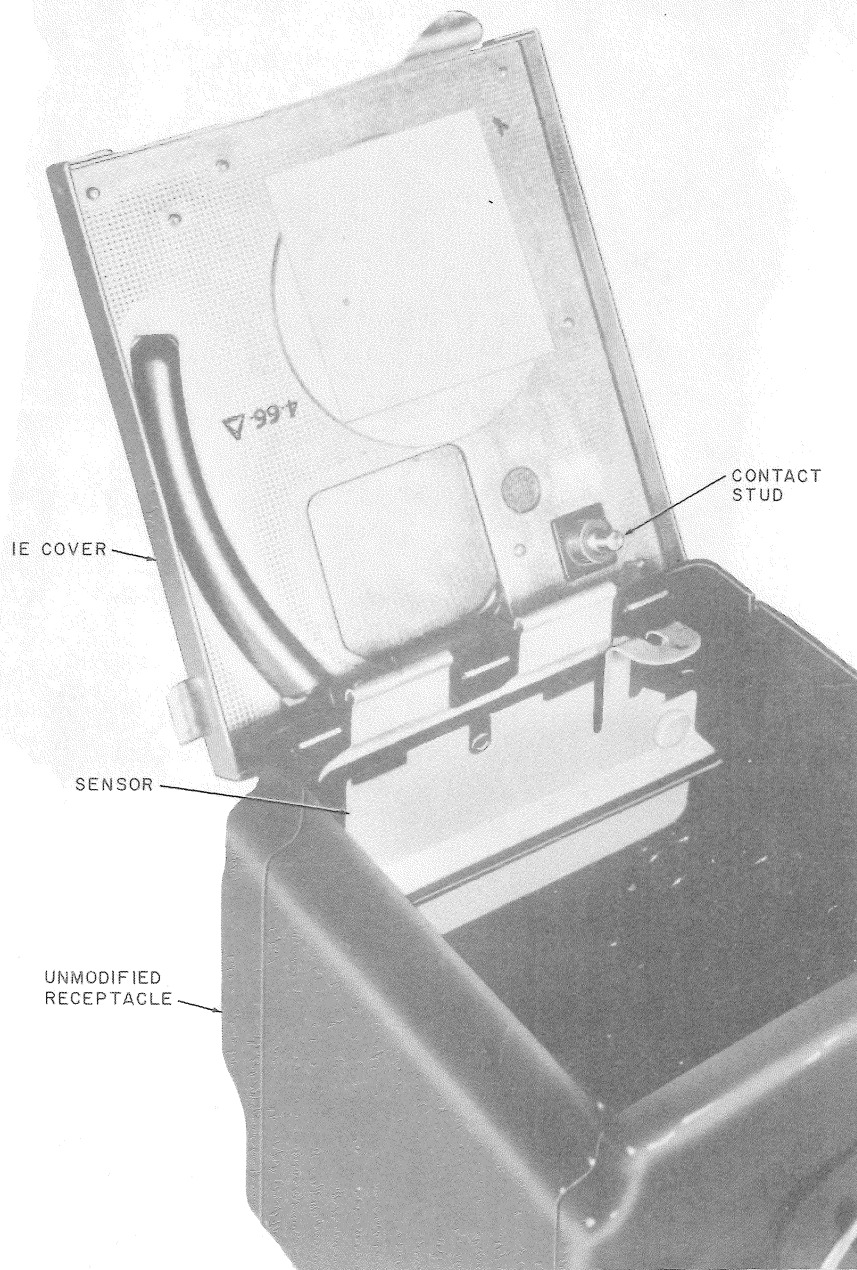
4.01 Remove coin relay cover.

4.02 The lead provided with the D-180042 kit is equipped with a screw clamp to facilitate fastening to the ground tab (P-10E795) on the coin relay (Fig. 8). Care must be taken not to alter the adjustment of the coin relay by bending the spring member. Connect the spade tip of the lead to the front terminal on the terminal board.

##### Local Monitoring

4.03 Connect a lead from the rear terminal of the terminal board to the indicating device





**Fig. 5—Modified Coin Box**

through existing cable entries in the rear of the telephone housing.

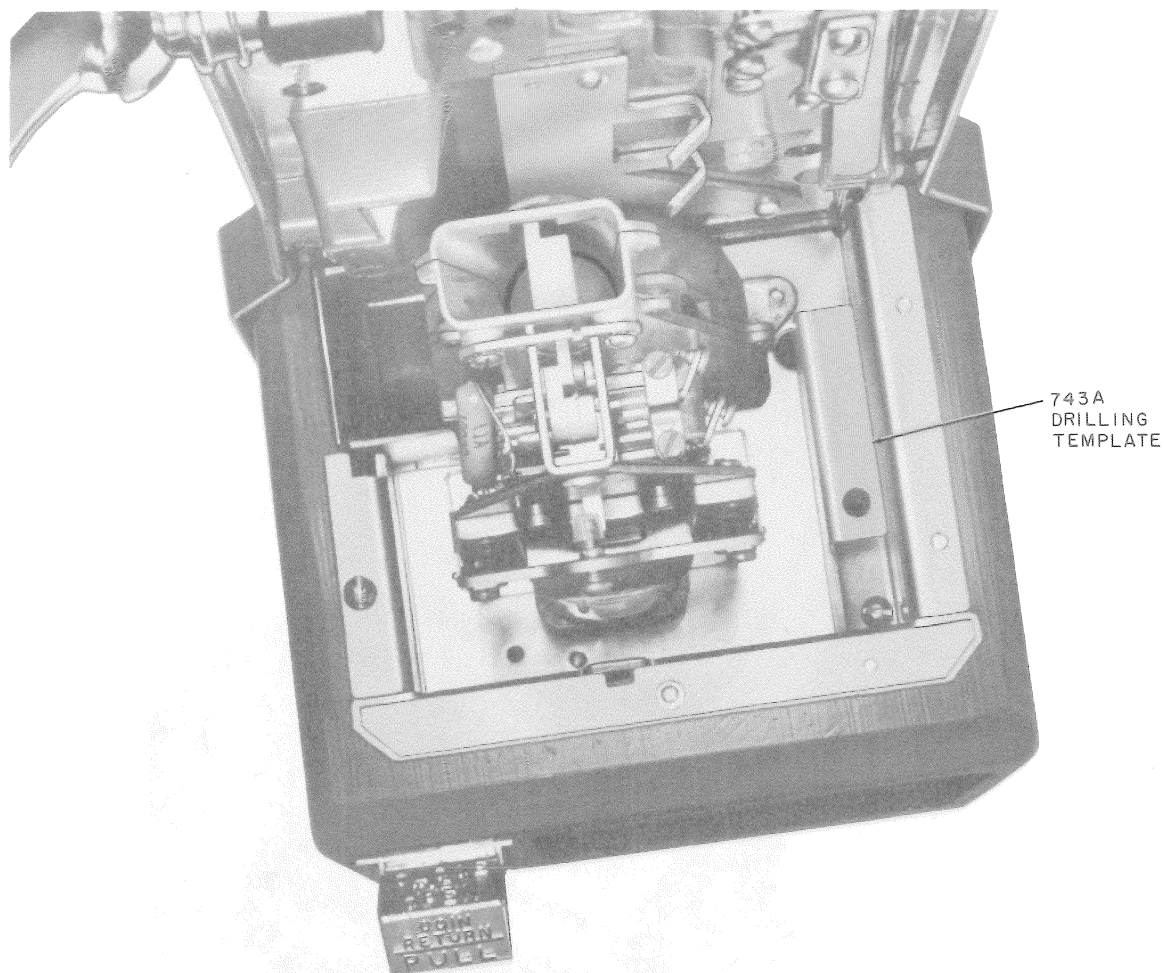
**4.04** Refer to Fig. 10 for connection diagram.

**4.05** Install coin relay cover and P-22F045 terminal board cover (Fig. 11).

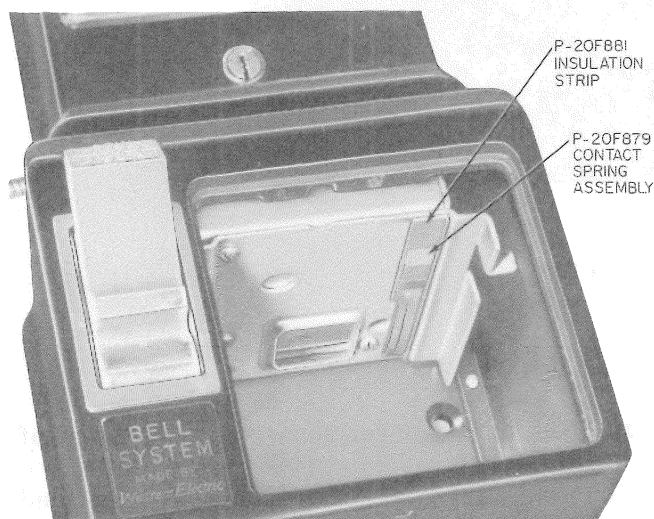
## **5. OPERATION**

**5.01** The dual element sensor is constructed of an insulated mounting plate with two conducting surfaces. One surface is grounded through the coin receptacle cover by spring clip contacts. The other conducting surface presses against the insulated stud on the cover and carries





**Fig. 6—Installation of Drilling Template**

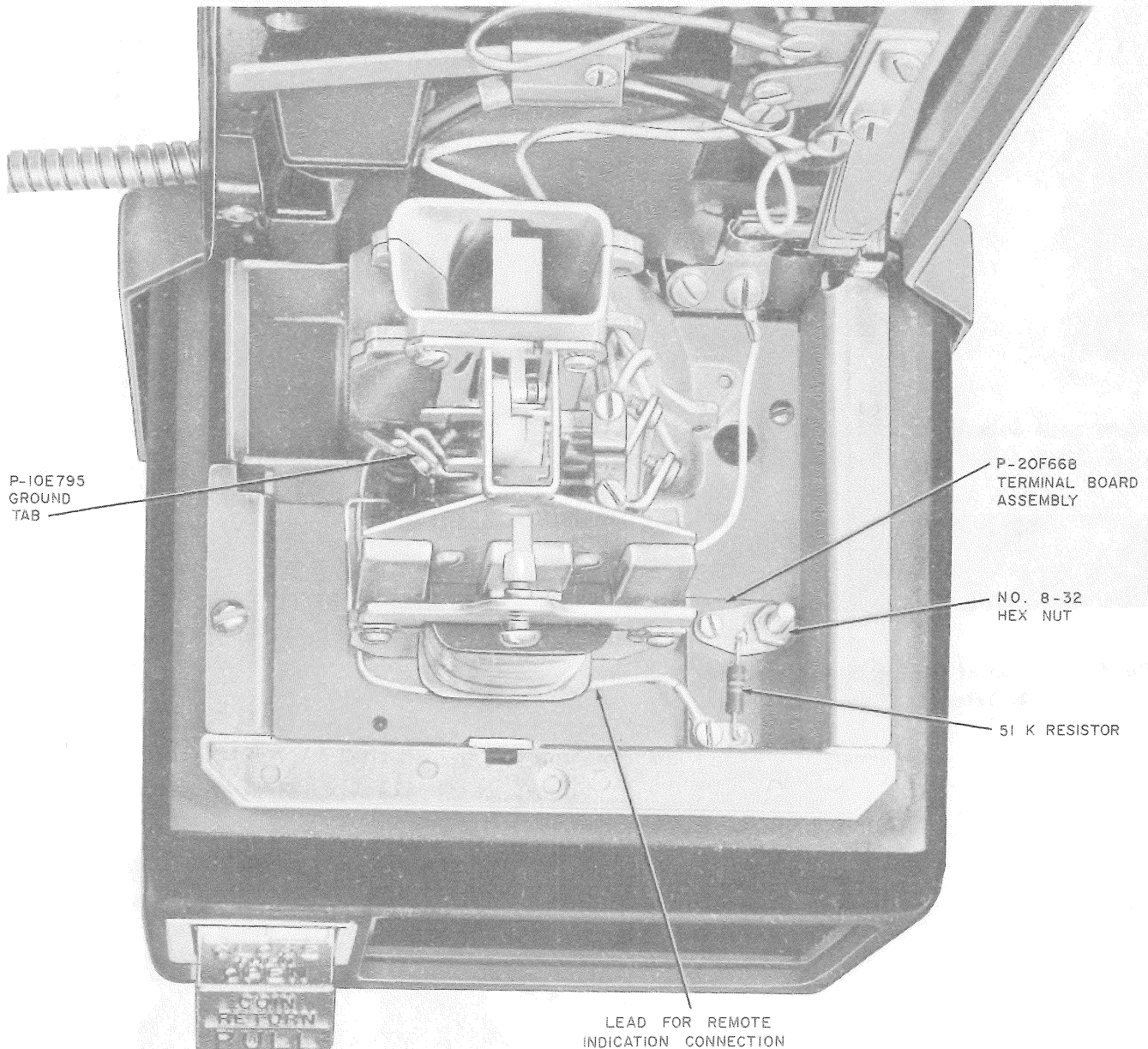


**Fig. 7—Installation of Insulation Strip and Contact Spring Assembly**

a coin level signal through the spring contacts (mounted on the receptacle rail) to the terminal board on the base of the set housing.

**5.02** Coins accumulating in the cash box will complete a circuit between the conducting surfaces of the sensor. A ledge between the conducting surfaces protrudes into the coin box and prevents coins from leaning against the sensor and prematurely indicating the coin level accumulation. The sensor is designed and physically mounted to provide an indication to local or remote monitors when the coin level reaches approximately 70 percent of the coin box capacity.

**5.03** For local monitoring, a locally supplied lead is connected to the terminal board to complete the circuit to a visual indicator. Alternately, a supplied lead and clamp assembly complete the circuit, through a 51K resistor to the coin relay,



**Fig. 8—Installation of Terminal Board Assembly**

to permit central office monitoring of the coin level circuit with line insulation test equipment. To prevent degradation of service, the 51K resistor is shorted by the hopper trigger contacts when the telephone is in use.

## **6. MAINTENANCE**

- 6.01** Inspect for dirty spring contacts and positive ground contact between the sensor and the

coin box cover. The insulated stud on the cover should be free of dirt and make a wiping contact with the upper plate of the sensor in the coin box. The top of the stud should make a wiping contact with the spring contact on the 1B rail when the coin box is installed in the vault.

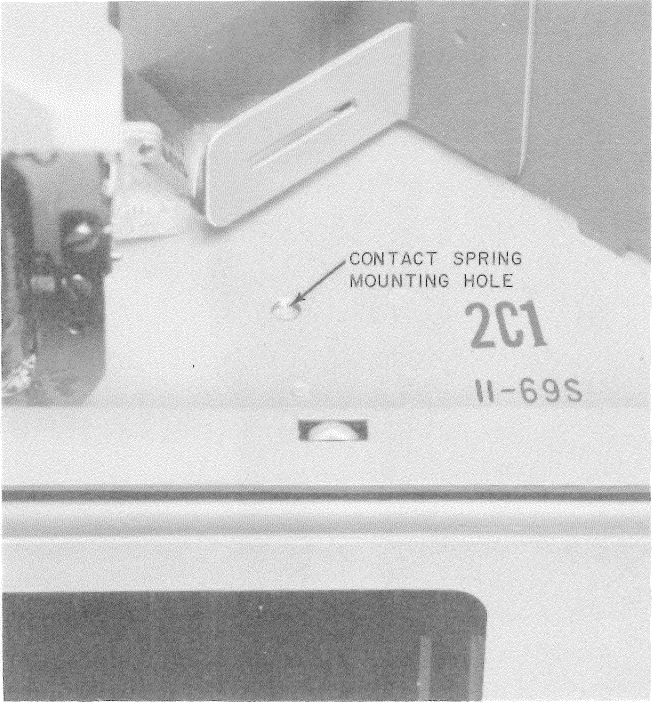


Fig. 9—Location of Contact Spring Mounting Hole in 2A/2C Telephone Sets

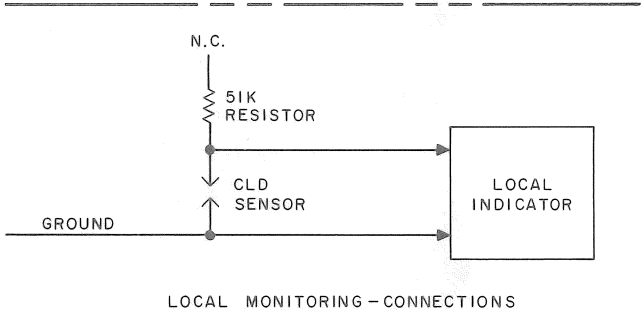
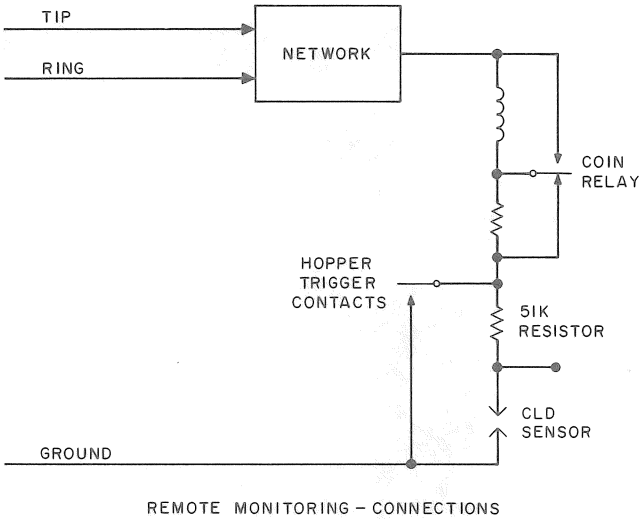


Fig. 10—Coin Level Detector—Connections

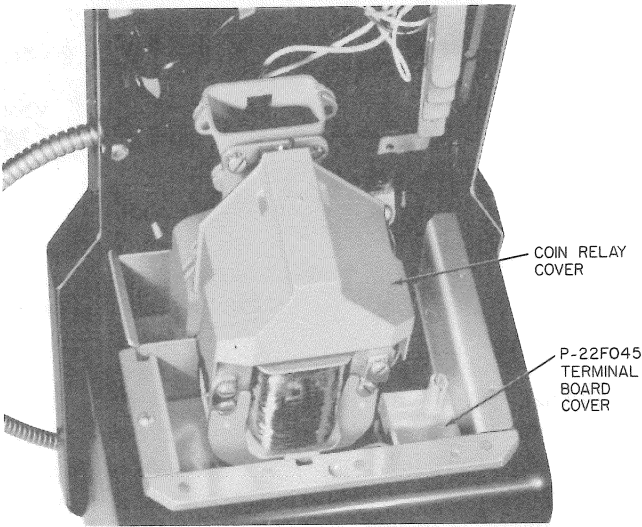


Fig. 11—Installation of Coin Relay Cover and Terminal Board Cover

## COIN TELEPHONE STATIONS

### DIAL TONE FIRST—MULTISLOT

#### 1. GENERAL

**1.01** This section covers the installation and testing of Dial Tone First and Automatic Nickel Local Overtime Features.

**1.02** Information in this section was previously contained in Section 506-110-110 which is hereby canceled.

**1.03** This section provides instructions for installing a D-180352 Kit (Fig. 1) which is an electromagnet replacement for the P-349747 electromagnet on P-20A125 through P-20A130 and P-340222 coin chute and gong assemblies. Modification information is also included for the 1200-type coin collectors.

**1.04** *Test A—Dial Tone First:* This test verifies proper operation of the coin collector after central office and station set conversion has been completed.

**1.05** *Test B—Automatic Nickel Local Overtime:* This test verifies proper operation of the automatic nickel local overtime feature (where provided) upon completion of the dial tone first modification.

**1.06** All Plant Series sections for the 190-, 200-, and 1200-type coin collectors apply unless otherwise specified in this section.

#### 2. APPARATUS

**2.01** The following apparatus is used in this modification procedure:

- (a) 446K diode
- (b) 131A gauge or equivalent
- (c) D-180352 Kit of Parts (required only with automatic nickel local overtime feature).

#### 3. MODIFICATION

##### DIAL TONE FIRST

**3.01** Open the set to obtain access to coin chute and gong assembly.

**3.02** Remove the dial shorting feature from the following sets as directed:

- (a) 191, 195, 196, 197 GT/GNT and 200 series coin collectors (except 235-type) — Disconnect, tape, and store the slate lead from terminal 1 of coin relay.
- (b) 191, 195, 196, 197 GT/GS coin collectors—Disconnect, tape, and store the slate lead from terminal X on the backplate assembly.
- (c) 191, 195, 196, and 197 GNS coin collectors—Disconnect, tape, and store the lead from terminal BKX on backplate assembly.
- (d) For 1234G coin collectors—Disconnect, tape, and store the yellow lead from terminal 1 of coin relay.
- (e) 235G and 1235G coin collectors—Disconnect, tape, and store the red lead from terminal 1 of coin relay.

**Note:** 191, 195, 196, and 197 G/GN sets do not require the modification covered in 3.02.

**3.03** Install 446K diode between terminals A and E on coin chute terminal board (Fig. 2 and 3).

**Caution:** *The polarity of the diode must be as shown in Fig. 3. Diode can be damaged if leads are stressed near the case. Leads should be supported close to the case during lead forming and installation to prevent damage.*



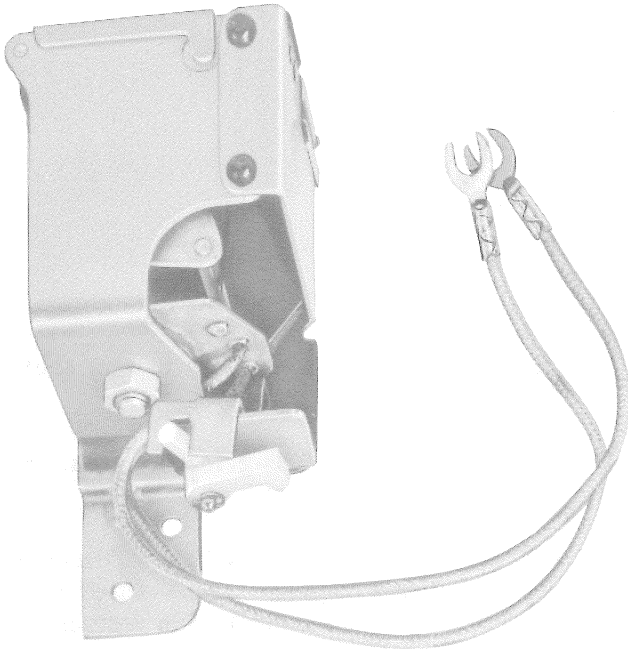
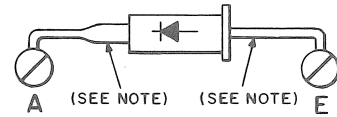


Fig. 1—D-180352 Kit



NOTE:  
DO NOT BEND LEADS WITHIN  
1/16 IN. OF CASE.

Fig. 3—Polarity of 446K Diode

#### AUTOMATIC NICKEL LOCAL OVERTIME FEATURE

**3.04** If automatic nickel local overtime feature is provided:

- (a) On P-20A125 through P-20A130 and P-340222 coin chute and gong assemblies, disconnect leads from terminals A and E and remove P-349747 electromagnet (Fig. 4).
- (b) On P-340222 assembly, it will be necessary to remove P-347212 shield (Fig. 4) as follows:

- (1) Bend the tab outward on the left side of the shield.
- (2) Break the right side of the shield away from rivet by bending the shield in a repeated upward and downward motion.

(c) Install D-180352 Kit (Fig. 1 and 5) on the coin chute and gong assembly in the same position in which the electromagnet was located. Secure with existing hardware.

(d) Connect the leads to terminals A and E.

(e) After installing the kit, the following requirements must be met:

- (1) With the armature in the normal position (unoperated), the clearance between the lever and locking latch tab shall be .020 minimum and .060 maximum (Fig. 6). The locking latch tab is adjusted by bending only the top portion of the latch to meet this gap requirement.

- (2) With the coin chute mounted in the normal position and the armature fully operated, the locking latch tab shall clear the holding latch tab by .060 minimum (Fig. 7).

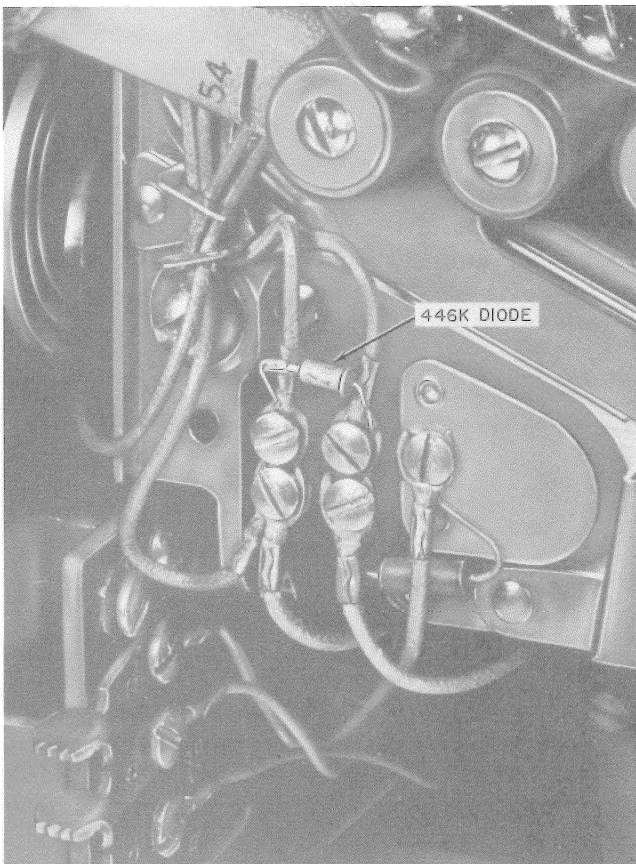
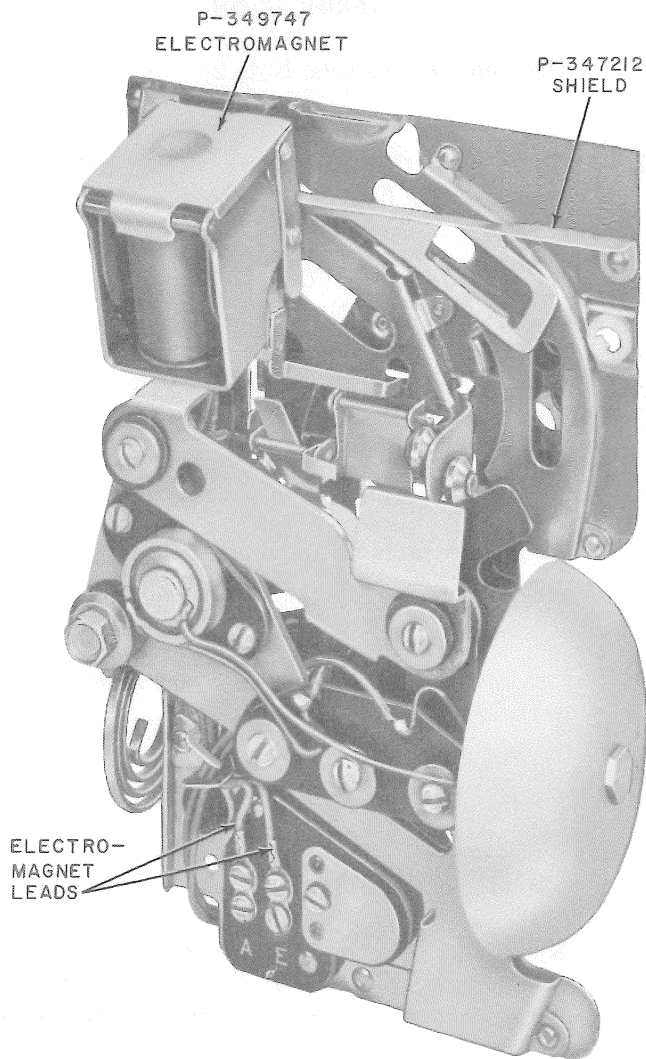
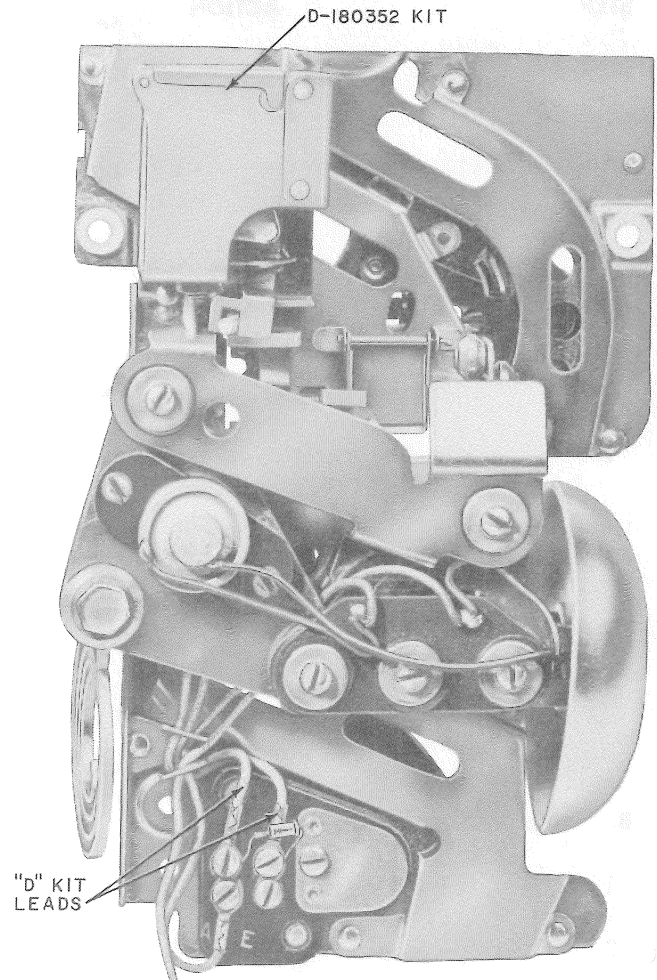


Fig. 2—Installation of 446K Diode



**Fig. 4—Coin Chute and Gong Assembly Before Modification**



**Fig. 5—Coin Chute and Gong Assembly-After Modification**

#### 4. TESTS

##### 4.01 *Method*

##### STEP

##### ACTION

##### A. Dial Tone First

- 1 Lift handset.
- 2 Deposit nickel.
- 3 Slowly operate coin release.
- 4 Deposit nickel, depress switchhook.

##### VERIFICATION

- Dial tone is present.
- Nickel does not return (See Note 1).
- Nickel drops into return chute.
- Nickel returned.

## SECTION 506-100-106

STEP	ACTION	VERIFICATION
5	Release switchhook and dial any digit except "0" or "1".	Dial tone breaks (See Note 2).
6	Depress and release switchhook, deposit 2 nickels, 1 dime, and 1 quarter.	Coins pass through chute, strike bells and gong and are held at coin relay.
7	Dial test line code. (See Note 3.)	Audible ringing heard in handset.
8	Hang up handset.	Coins return.
9	Call operator, deposit nickel, dime and quarter.	Coins identified by operator.
10	Request operator to return coins.	Coins returned.
11	Request operator to call back. (Hang up handset)	Ringer operates at maximum volume.
12	Lift handset, listen for dial tone and dial number that requires initial rate deposit. (Do not deposit coin.)	Recorded announcement is heard (insufficient deposit).

### B. Automatic Nickel Local Overtime

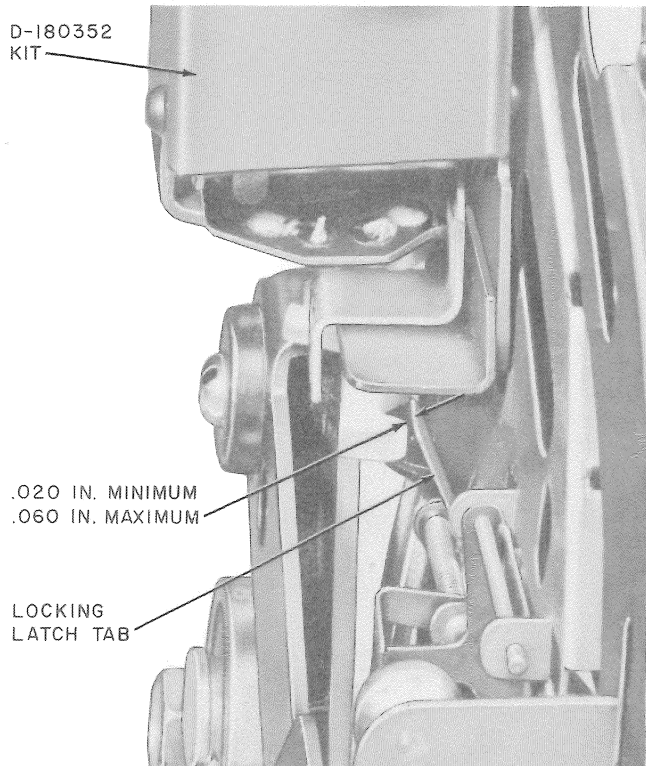
1	Lift handset and deposit nickel.	Nickel should not be returned (See Note 1).
2	Dial operator.	Nickel should pass through the chute, strike coin signal bell, and hold at coin relay. Nickel is returned when operator answers (See Note 3).
3	Replace handset.	

**Note 1:** Failure to verify Step 2 (Test A) and Step 1 (Test B)—446K diode is reversed or defective.

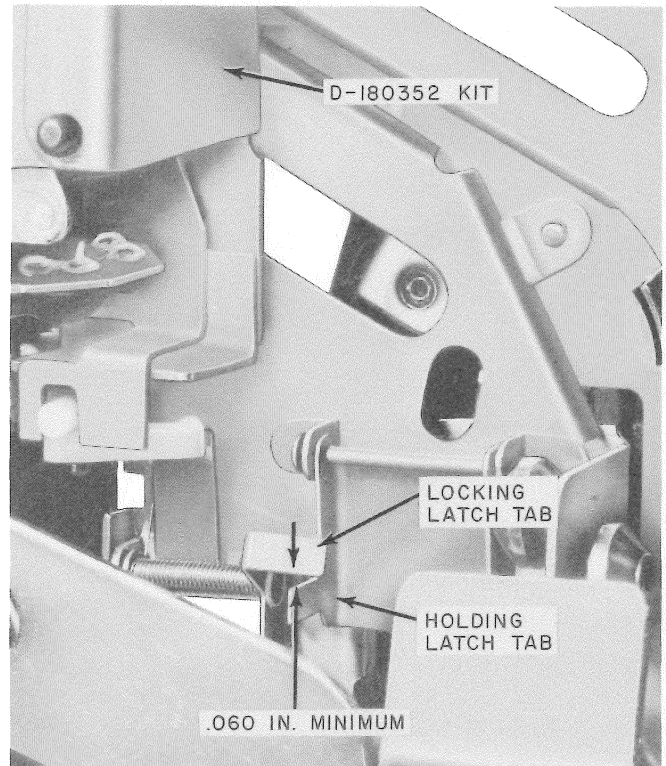
**Note 2:** Failure to verify Step 4 (Test A)—lead on terminal 1 on coin relay is not insulated and stored or defective dial.

**Note 3:** The test line code should be a number that requires deposit for connection and a number that will *not* be answered, otherwise the coins will be collected.

**Note 4:** Failure to verify Step 2 (Test B)—defective chute or electromagnet.



**Fig. 6—Clearance Between “D” Kit Lever and Locking Latch Tab**



**Fig. 7—Clearance Between Locking Latch Tab and Holding Latch Tab**





## MANUAL EXTENSION STATION SERVICE ON SEMI-PUBLIC COIN LINES CONNECTED TO 1C/2C-TYPE COIN TELEPHONE SETS

### 1. GENERAL

**1.01** This section provides installation, connections, and testing information for associating a nondial extension telephone on a semi-public coin line which terminates in a 1C- or 2C-type coin telephone set.

**1.02** Either a wall or desk-type telephone specially modified by the Service Center must be used as the extension station instrument. A desk-type set can be ordered as a "Set, Telephone, 500C-(plus suffix color code), modified per D-180405". A wall-type set can be ordered as a "Set, Telephone, 554A-(plus suffix color code), modified per D-180406".

**1.03** Special instructions and a loose P-43A392 screw are furnished with the extension station instrument. Their purposes are explained below.

### 2. INSTALLATION

**2.01** Since the special D-kit applique circuit installed in and operated by the extension station is associated with the ring side of the line, it is necessary to bridge the ring lead of the incoming CO line on the L1 network terminal of the 1C/2C coin phone and extend it from there to the extension station and back before connecting it on the R terminal of the 1A coin chassis.

**2.02** The loose P-43A392 screw furnished with the D-Kit equipped extension station set (1.03) is installed in the L1 network terminal for ring lead bridging, as well as testing, purposes.

**2.03** The tip side of the coin line is extended from the T terminal in the coin set to the extension set location over one of two paired wires. The other half pair lead is deadended, both ends, and affords capacitance balance.

**2.04** The coin signaling ground should not be extended beyond its normal G termination in the coin telephone set.

### 3. CONNECTIONS

**3.01** Fig. 1 illustrates connections to the coin telephone set, manual extension station and, when provided, an optional station busy visual signal which will indicate when the extension station is off-hook.

### 4. STATION TESTS

**4.01** After extension station is installed and before instructing customer in its use, verify with the test desk (or operator) that the extension station can not talk or monitor on any call originated or answered at the coin telephone station *before* the extension station goes off-hook.

**4.02** Verify with the testdesk (or operator) and the customer that the coin telephone user can participate on an incoming call *after* it has been answered at the extension station.

**4.03** With both coin telephone and extension station off-hook and conversing on an incoming call (as per 4.02), momentarily operate line switch at extension station. Verify that cutoff takes place and no further conversation is possible on that call from the extension station location.

**4.04** Have testdesk (or operator) initiate incoming call to station line under test. Answer call at extension station. Leave handset off-hook.

- (1) Go off-hook at coin telephone set. Deposit initial rate. Totalizer steps off-normal.
- (2) Transmission may be cut off. Coin(s) fall into hopper, onto coin trap.
- (3) Momentarily depress E switch, push button on extension station set.

- Totalizer steps back. Transmission returns to normal

- (4) Hang up handset at extension station.  
Request refund of initial rate deposit. Hang up coin station handset.

- Coin(s) returned

**4.05** When provided, verify that station busy visual signal indicator operates whenever the extension station goes off-hook.

## 5. CUSTOMER INSTRUCTIONS

**5.01** Install appropriate customer instruction tag or sign at coin telephone location signifying that: nearby extension station can answer incoming calls on this line, and that if conversation is heard on the line when attempting to initiate call COIN DEPOSITS SHOULD NOT BE MADE. Instead, carefully hang up handset. Wait several minutes before trying again.

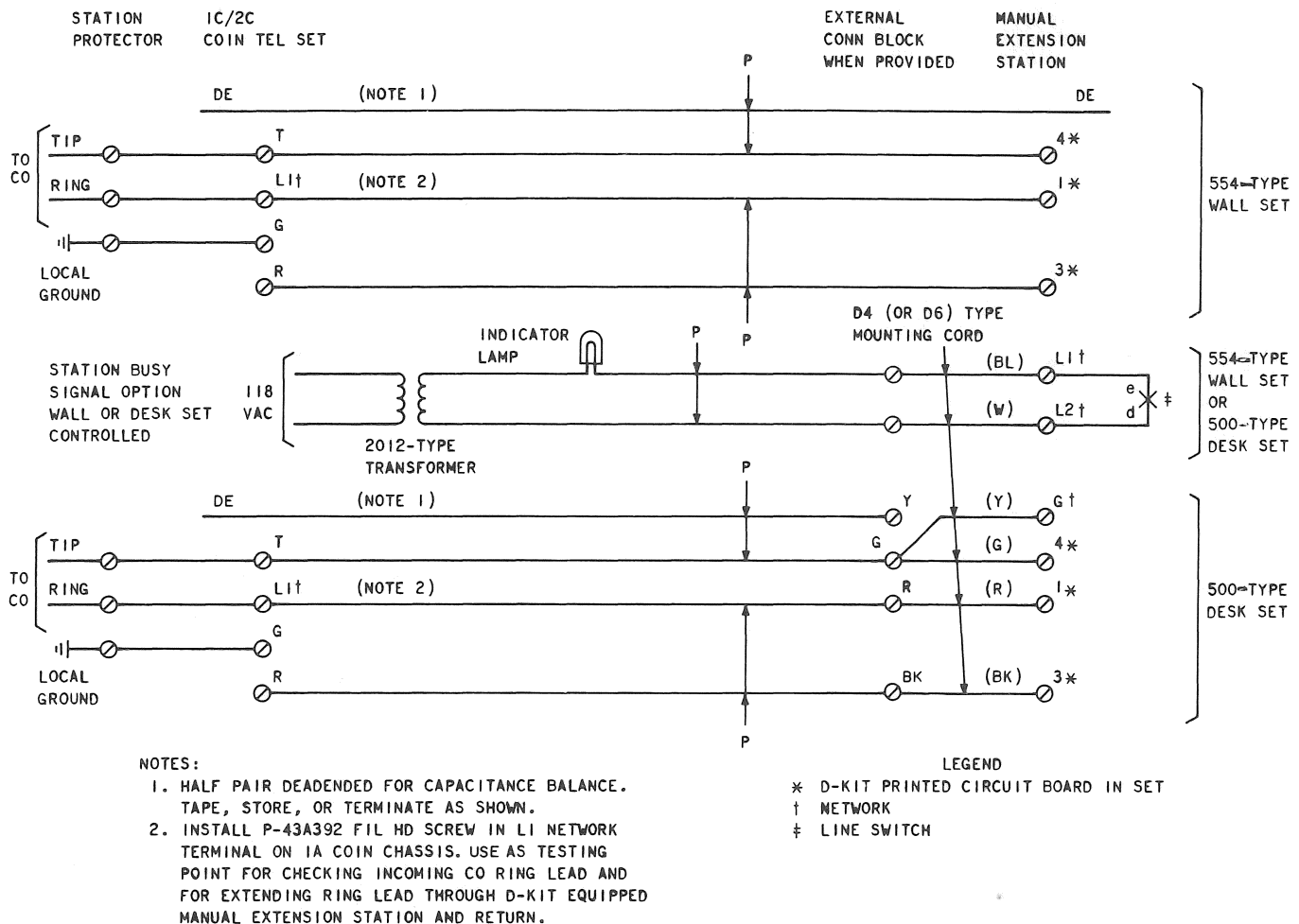
**5.02** A 7/8 by 3-1/4 inch customer instruction label (840390876) is furnished with each D-kit

of parts (extras can be ordered separately) and should be installed approximately 1/8-inch below dial apparatus blank on a desk set or approximately 1/2-inch below dial apparatus blank on a wall set. The label reads as follows:

**NOTICE:** If someone tries to use coin phone or deposit coins while you are talking, ask him to hang up until your call is finished. PUSH BUTTON on this phone momentarily to prevent cutoff.



*It is recommended that the customer or extension station user participate with the craftsman in running through operational verification (4.02, 4.03, and 4.04) so that the customer-user can become familiar with both the coin station and extension station operating features involved.*



**Fig. 1—Connections For Manual Extension Station Service With Station Busy Signal Option In Association With Semi-Public 1C/2C-Type Coin Telephone Set**



## COIN TELEPHONE STATIONS

### COIN HOPPER VANE REPLACEMENT

#### 1. GENERAL

**1.01** This section provides identification and installation information for field replacement of the coin vane.

**1.02** This section is reissued to add information on the 840157333 trap lever spring.

#### 2. IDENTIFICATION

**2.01** The 840360572 replaceable coin vane (Fig. 1) is a part of D-180410 Kit of Parts.

**2.02** This replaceable vane can be installed in all coin collectors and coin telephone sets having single-coil coin relays.

#### 3. INSTALLATION

**3.01** Remove upper housing, cover unit assembly, or open door and faceplate assembly to obtain access to coin relay.

**3.02** With single slot coin telephone sets, remove chute-totalizer and return chute assembly.

**3.03** To remove coin relay:

- (1) Remove dust cover.
- (2) Tag for later reference; then, disconnect leads from terminals G and 3 of coin relay.
- (3) Remove four mounting screws (one on each side and two at top-front).
- (4) Slide relay forward to clear trap and vane and lift upward. Exercise care when extracting trigger from hopper.

**3.04** To remove coin trap:

- (1) Move vane to right (Fig. 2).

(2) Remove trap pin by sliding vertical portion over boss on front of hopper and sliding to the right.

(3) Turn coin trap sideways and remove through opening. If P-10E702 trap lever spring (Fig. 2) exists, it can be removed from trap lever and discarded or left in place if desired.

**3.05** To remove old coin vane:



*Do not drop particles into coin box or coin return. Stuff a cloth or equivalent in the return chute during modification.*

(1) With long nose pliers and screwdriver, break out old damaged vane **using caution to avoid injury.**

**3.06** To install new vane in hopper:

- (1) Refer to Fig. 1 and carefully break handle off new 840360572 vane. This handle serves as the new hinge pin.
- (2) Position vane in hopper (Fig. 3) through left side opening and grasp with long nose pliers (Fig. 4).
- (3) Insert pin (Fig. 4) through hopper housing and vane until indentations on pin snap in place in vane (Fig. 5). Ensure that vane moves freely.

**3.07** To install coin trap and associated parts:

**Note:** Always use an 840157333, wire type, trap lever spring when installing a coin trap.

- (1) Partially insert trap pin.
- (2) Place trap lever on trap pin (Fig. 6).
- (3) Insert coin trap in hopper and engage pin in trap (step 1, Fig. 7).

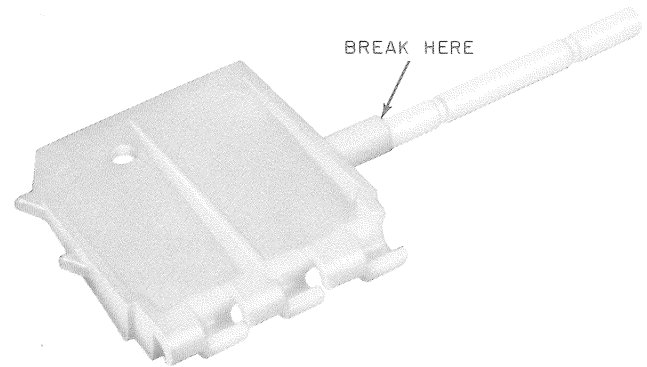
- (4) Holding notched left leg of 840157333 spring at an angle away from hopper, slide the right notched leg of the spring under trap pin (step 2, Fig. 7).
- (5) Swing loose end of spring across face of trap lever and position notch of left leg in alignment with end of trap pin (step 3, Fig. 7).
- (6) Push trap pin to the left, over and through the left leg notch of the new spring, until the trap pin detents (step 4, Fig. 7).

**3.08 To install coin relay:**

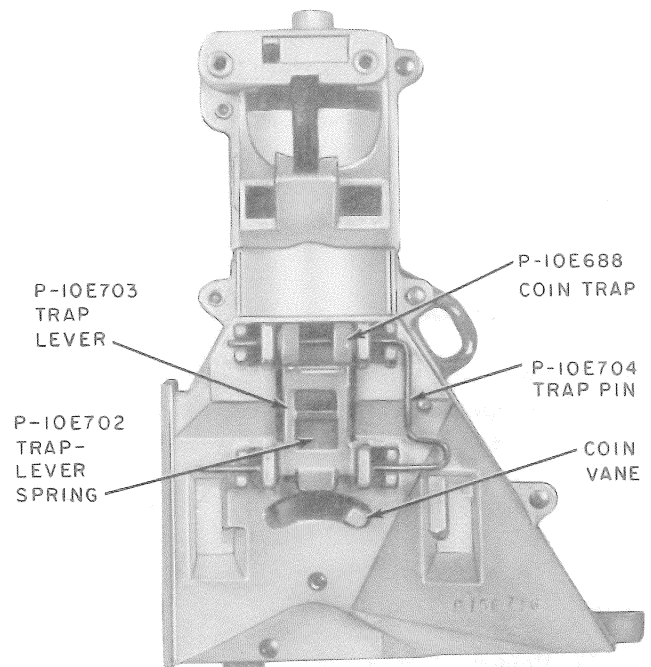
- (1) Move vane to right.
- (2) With trigger tripped, place relay on hopper.
- (3) Slide relay back until trigger enters opening in hopper and trap-lever tab enters slot in selector card (Fig. 8).
- (4) Close armature manually by pressing downward on ear on left side of selector card.
- (5) Slide relay back, vane stem should enter hole in cam and mounting screw holes should line up.
- (6) Replace mounting screws.
- (7) Trigger should have some end play; and armature, trap, and vane should operate and release without binding.
- (8) If trigger binds, loosen upper mounting screws.
- (9) If trigger is free with upper mounting screws loose, retighten screws evenly.
- (10) Replace relay if trigger still binds.
- (11) Connect the two leads to terminals G and 3 on coin relay.
- (12) Replace dust cover.

**3.09** With single slot coin telephone sets, install return chute assembly and chute-totalizer.

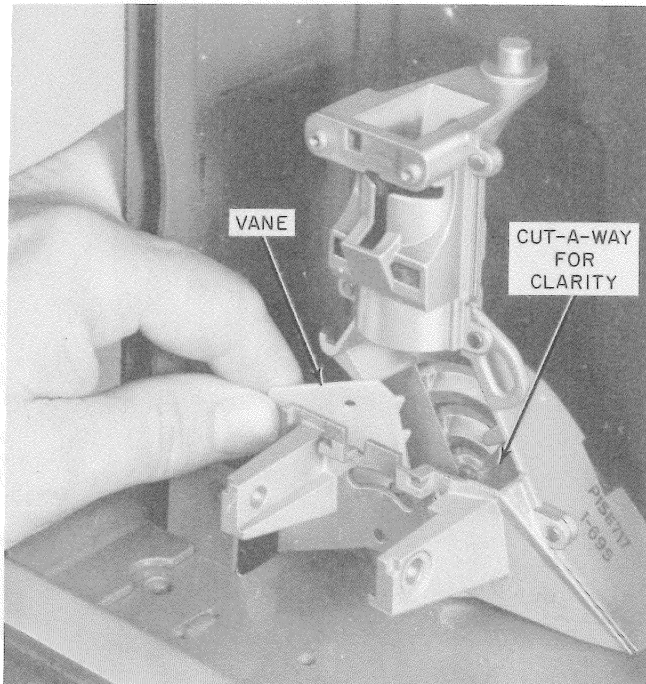
**3.10** Close door and faceplate assembly, install cover unit assembly, or install upper housing.



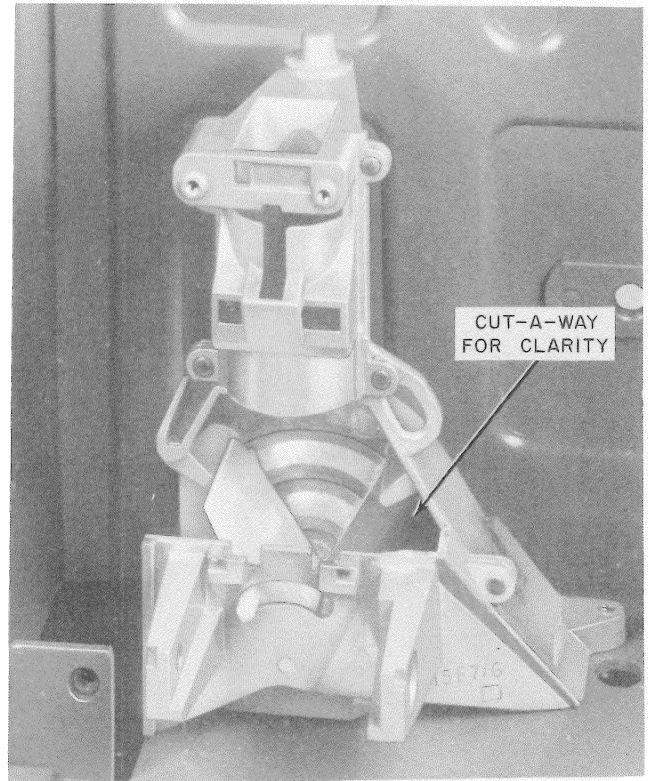
**Fig. 1—840360572 Replaceable Coin Vane**



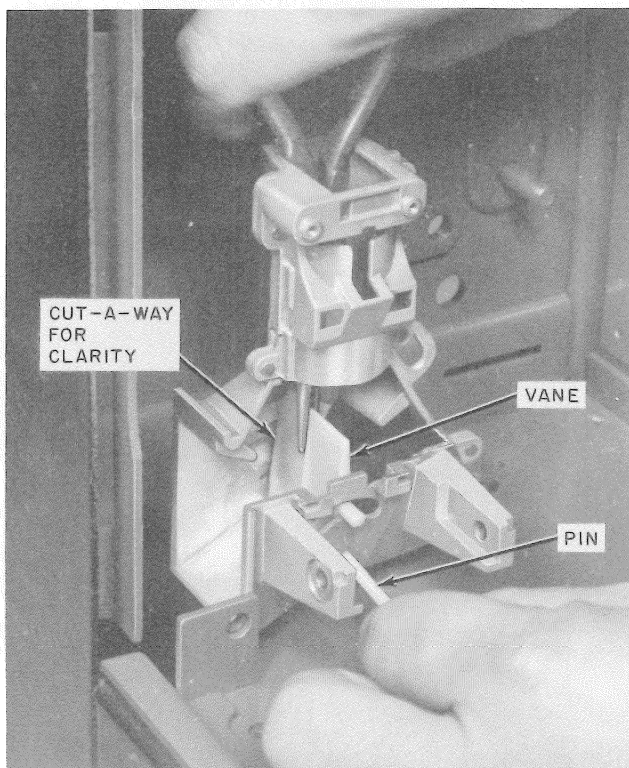
**Fig. 2—Coin Trap and Trap-Lever Assembly**



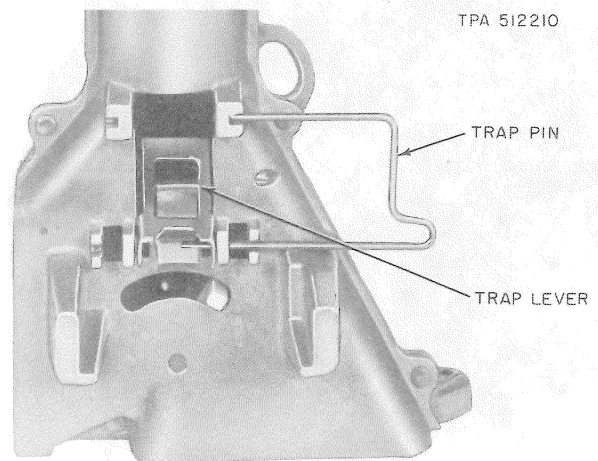
**Fig. 3—Inserting Vane**



**Fig. 5—Vane Installed**

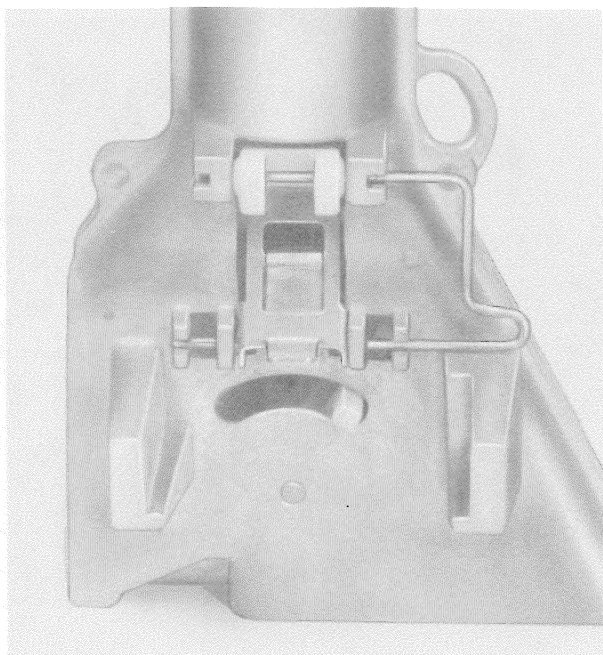


**Fig. 4—Installing Pin in Vane**

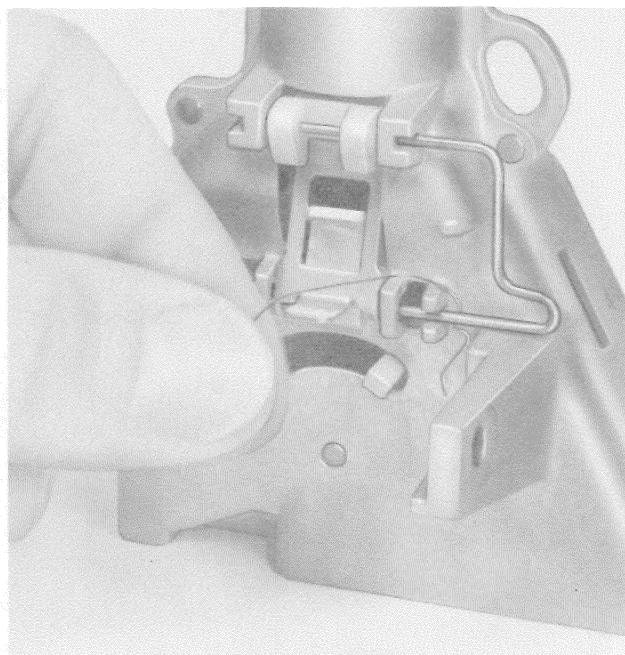


**Fig. 6—Placing Trap-Lever Pin in Hopper**

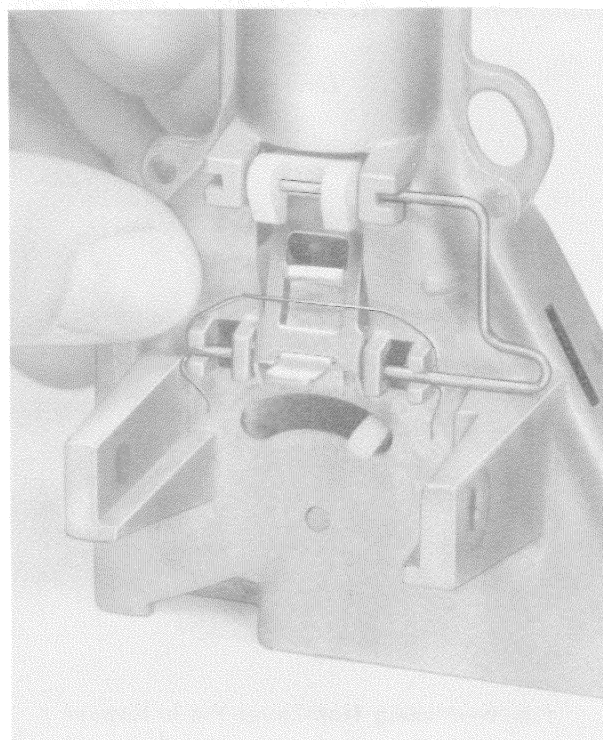




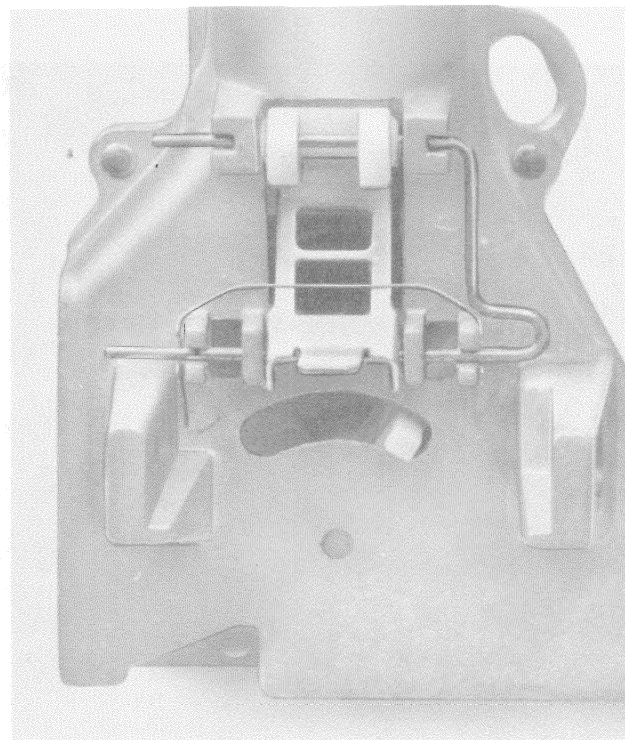
STEP 1



STEP 2



STEP 3



STEP 4

Fig. 7—▶Installing 840157333 Trap Lever Spring◀

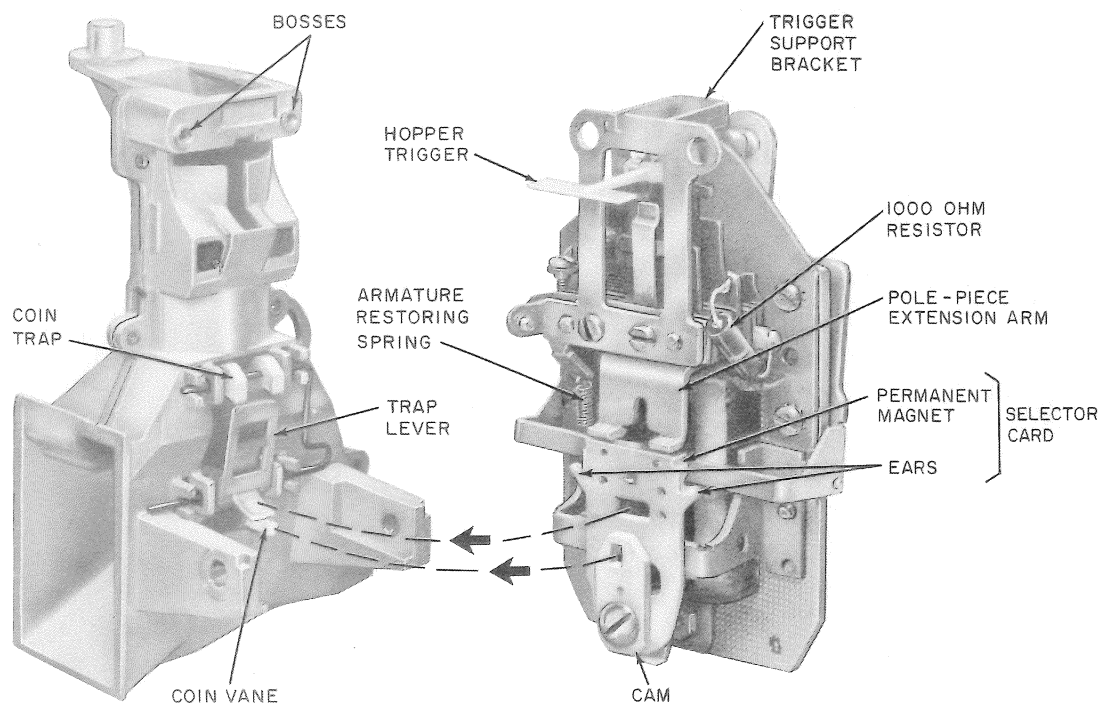


Fig. 8—Coin Hopper and Rear View of Coin Relay (Typical)



**REPLACING PAGE ADDENDUM**

***Filing Instructions:***

1. REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.
2. INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.
3. PLACE THIS PINK SHEET AHEAD OF PAGE 1 OF THE SECTION.

**COIN TEST LINE CIRCUIT**

**1. GENERAL**

**1.001** This addendum supplements Section 506-100-130, Issue 1. The attached page must be inserted in the section in accordance with filing instructions above.

**1.002** This addendum is issued to change title of Fig. 3 from KS-14993, List 3 Tool to KS-14995, List 3 Tool.

**2. PREPARATION**

The following change applies to Part 2 of this section:

- (a) Fig. 3—revised

**Attached**

**Page 3 dated January 1973, revised**  
**Page 4 dated January 1973, reissued**



## COIN TEST LINE CIRCUIT

### 1. GENERAL

**1.01** The Coin Station Test line is usable on coin lines *not* equipped with dial long line units. It allows the installation or repair forces to make the following operational tests without tying up local test desk facilities or requiring services for an operator:

- Coin Detection and Ground Removal (single slot sets)
- Ground and Loop Resistance
- Loop Leakage
- Coin Collect
- Coin Return
- Coin Relay Operating Time

**1.02** The test line should be used in conjunction with the 8 or 10 step coin station routine outlined in Issue 2 of the Coin Maintenance Check booklet or Section 506-900-503, Issue 2. Troubles listed under *failures* in the coin test line procedure refer to the Trouble Analysis Tables in Issue 2 of the Booklet or Section 506-900-503, Issue 2, i.e. (B-1) indicates Table B, trouble 1.

**1.03** All tests provided by the test line may be made at coin stations having a single-coin relay.

**1.04** Tests are based on an initial rate of ten cents, when called for. A nickel deposit is required when making the Coin Return test except with single slot sets in coin first (CF) mode.

**1.05** Tests should be made in a sequential manner as shown in the Test Line Procedure. Tests may be repeated by dialing the assigned digit when the test line is in the "Test Selection Mode" (interrupted dial tone). Once the Relay Time test has been dialed (digit 5), the test can be recycled as often as necessary by tripping hopper trigger or redepositing the initial rate. The Coin Detection

and Ground Removal tests require disconnect and reseizure of the test line if retest is desired.

**1.06** If no action is taken for approximately 60 seconds after the reception of the "Test Selection Tone" (interrupted dial tone) during any phase of the sequence, the test line will automatically disconnect and restore the circuit to normal.

**1.07** Tones are used to indicate a required action by the craftsman as follows:

- Alternating high and low tone (Tone C)—requires deposit of coin or operation of hopper trigger.
- Steady high tone (hang-up tone)—request to restore handset to on-hook condition. In some tests high tone replaces tone C upon deposit of coin or operation of trigger.
- Interrupted dial tone (test selection tone)—proper digit should be dialed (2 through 5) depending on test desired.

**1.08** Test results are returned to the craftsman in the form of coded beeps or rings which are repeated three times i.e., 1 beep repeated 3 times. When called for in the sequence, the handset should be taken off-hook before the 3rd signal or the test line will disconnect.

**1.09** The Coin Test Line is capable of testing rotary or TOUCH-TONE® dial stations.

### 2. PREPARATION

**2.01** The following apparatus is required:

- P5M cord (Fig. 1)—Used to connect upper housing to lower housing in 200-type sets with transfer contacts
- P10B cord—Used to connect upper housing to lower housing in 236 and 1234 sets
- P11C cord—Used to connect cover unit assembly or door and faceplate assembly to

coin chassis in 235-, 1235-, 1A/1C-, or 2A/2C-type sets

- KS-20950, L1 parking tool (Fig. 2)—Used to hang cover unit assembly of 1A/1C-type set on side of housing, eliminating the need for a P11C cord
- 146B bias margin gauge—Collect and Return Test
- 1011B or 1013A hand test set—Connect to receiver circuit when upper housing or cover unit assembly is on floor or to verify coin signals on 1A/1C- and 2A/2C-type sets
- KS-14995, L3 tool—Placed between coin chute and hopper in single slot sets during Collect test to prevent collection of coins (Fig. 3)
- Two dimes, one nickel, one quarter

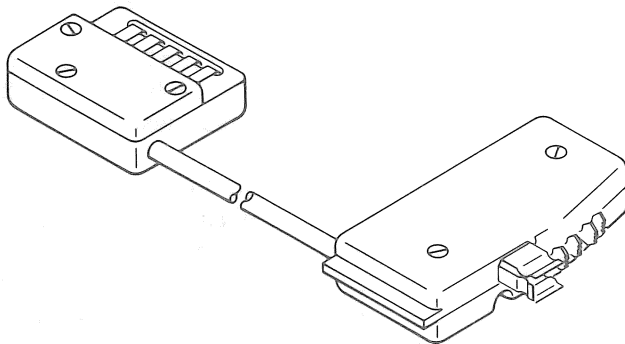


Fig. 1—P5M Cord

## 2.02 Prepare coin station as follows:

- (1) Remove upper housing of 200-type sets, cover unit assembly of 1A/1C-type sets, or open door and faceplate assembly of 2A/2C- and 235/1235-type sets.
- (2) If P11C cord is used, invert handset on switchhook of 1A/1C-type sets to prevent armored cord pushing handset off-hook when cover unit assembly is set down.

- (3) Where possible, place upper housing or cover unit assembly on level surface in a

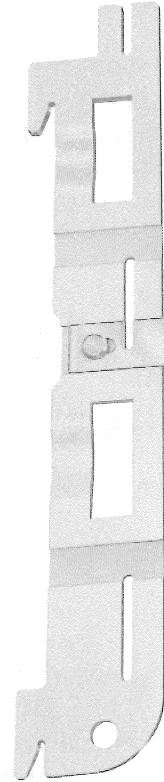


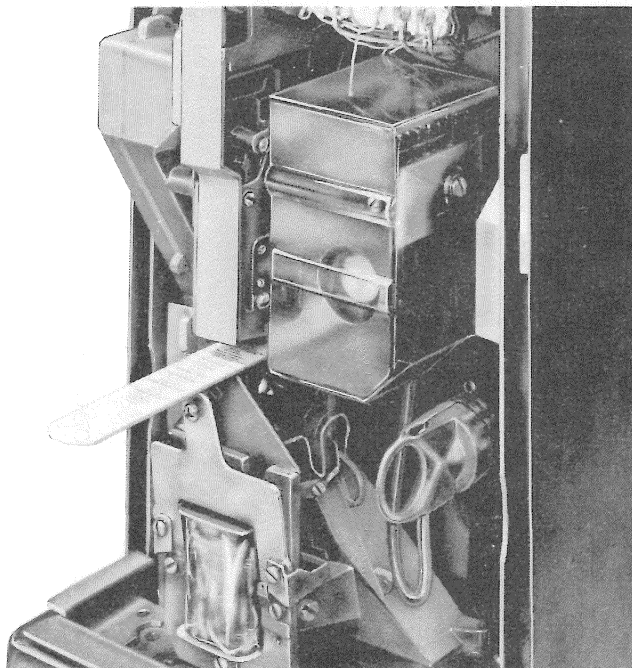
Fig. 2—KS-20950, List 1 Cover Parking Tool

position that will permit deposit, dialing, and handset removal. If upper housing or cover unit assembly must be placed on floor it may be necessary to connect hand test set leads to receiver circuit on dial and housing assembly and use in lieu of handset when making tests.

- (4) Connect upper housing, cover unit assembly, or door to lower housing or chassis using proper cord (2.01).
- (5) When testing 1C- or 2C-type sets, ensure that totalizer connector (PP-DTF) or CF-DTF mode switch, is in the proper position.

## 3. COIN TEST LINE PROCEDURE

### 3.01 Perform test per following flow charts:



**Fig. 3—KS-14993, List 3 Tool—In Position for Collect Test**

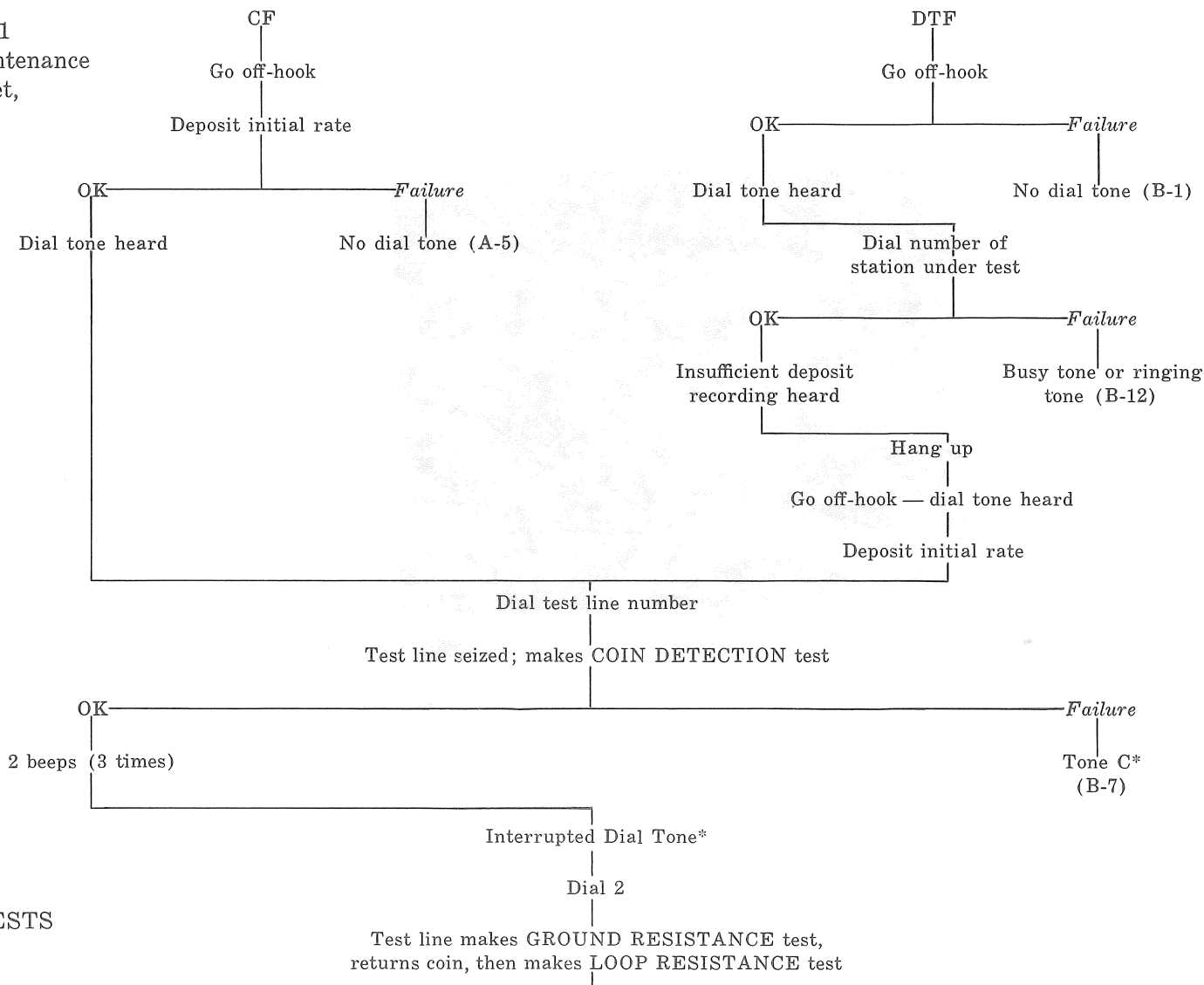


**LEGEND**

CF — Coin First  
DTF — Dial Tone First  
(B-1) — Table B,  
Trouble No. 1  
In Coin Maintenance  
Check Booklet,  
Issue 2  
(Typical)

**MULTISLOT COIN COLLECTORS**

**COIN  
DETECTION**



**GROUND & LOOP  
RESISTANCE AND  
LOOP LEAKAGE TESTS**

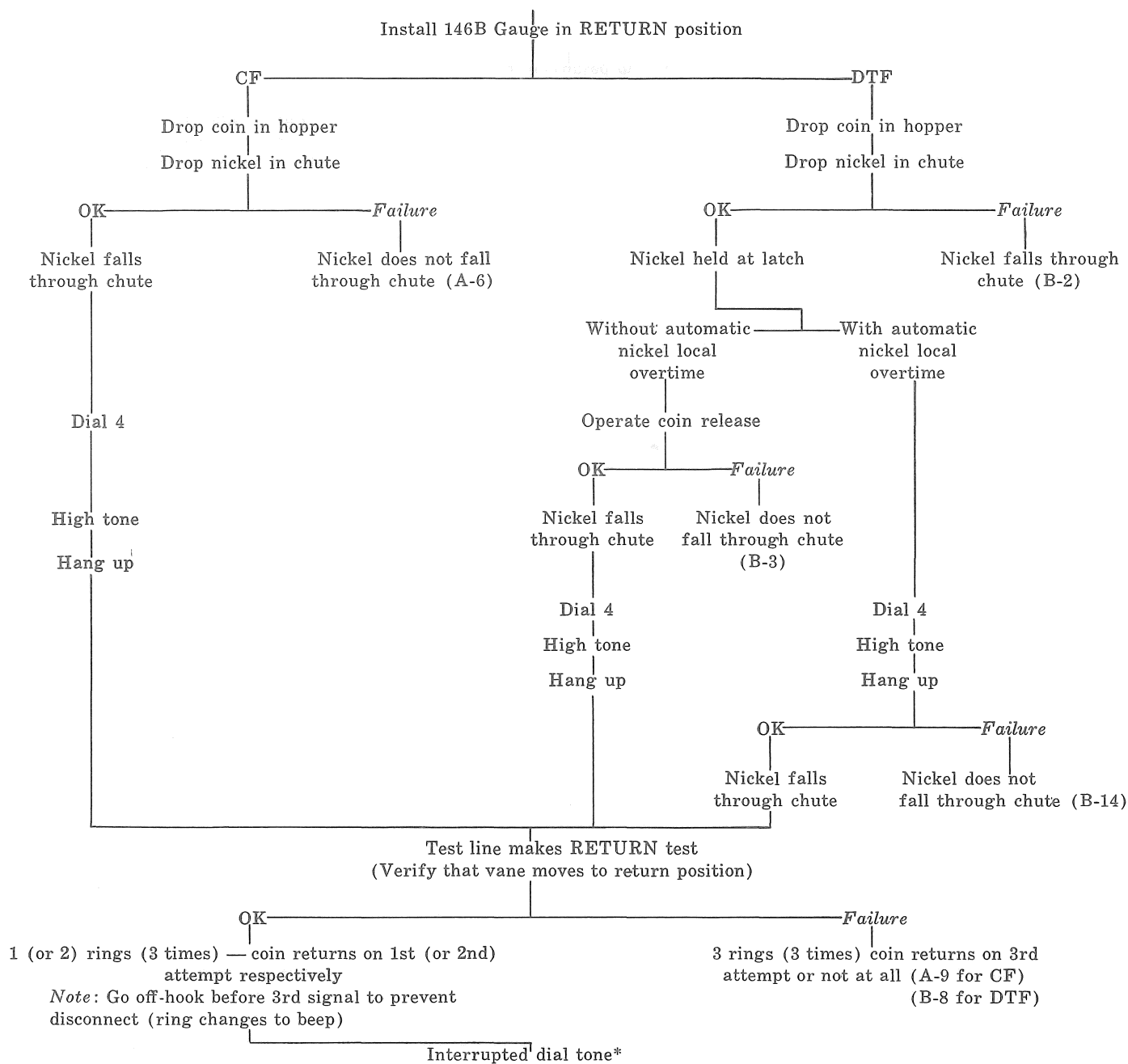
\*Tones time out in 60 sec.

## COLLECT TEST



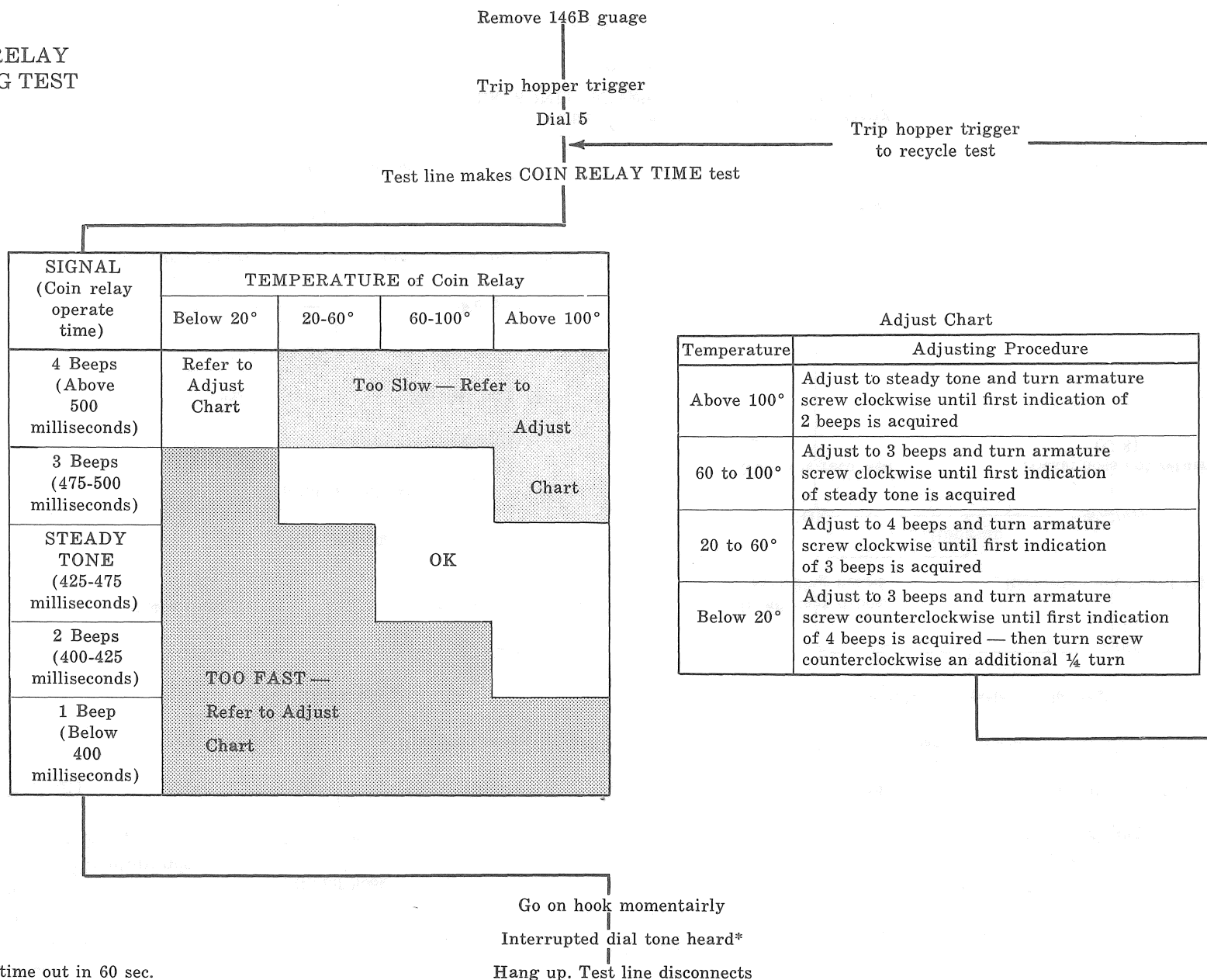
\*Tones time out in 60 sec.

## RETURN TEST



\*Tones time out in 60 sec.

# COIN RELAY TIMING TEST

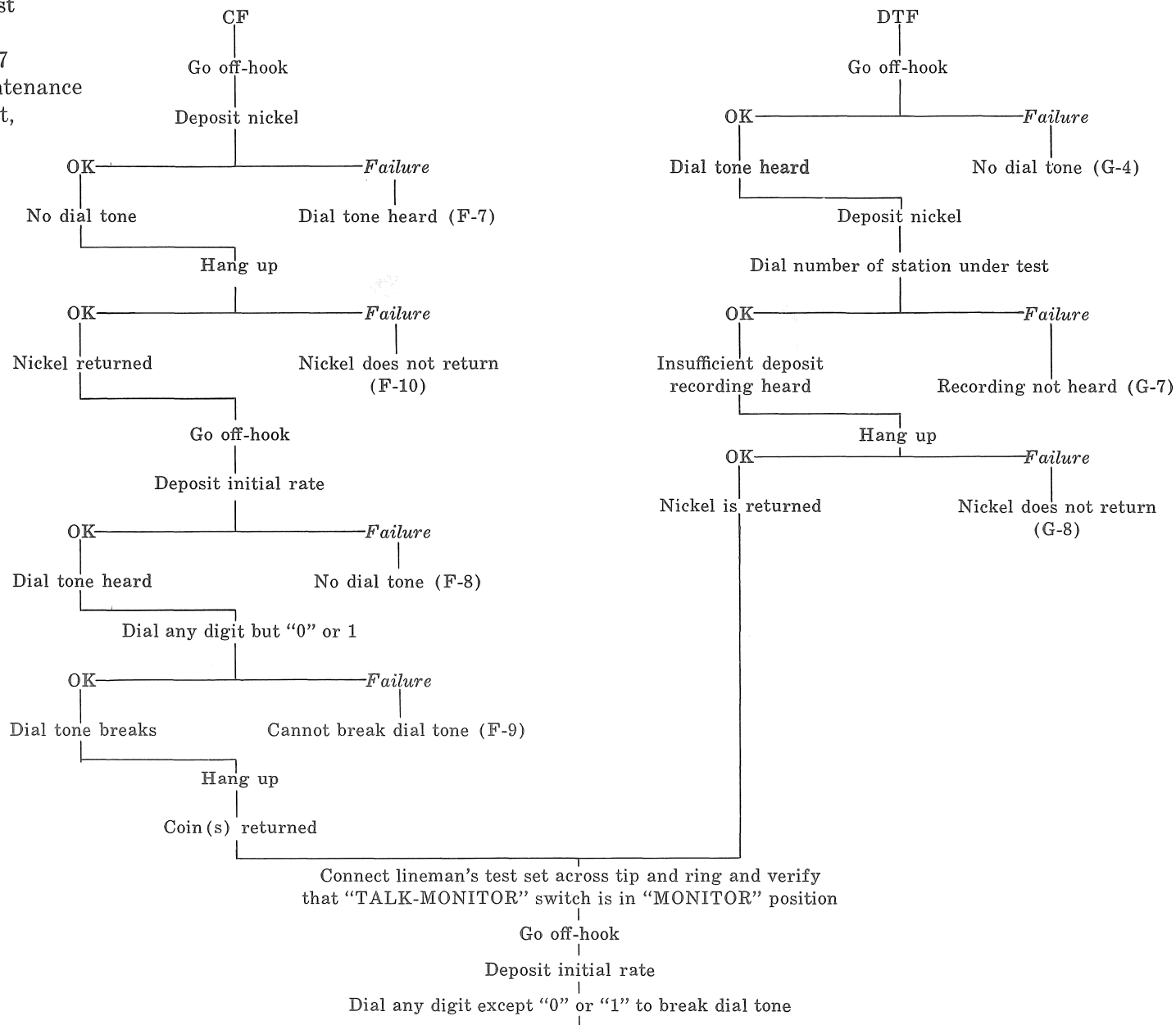


\*Tones time out in 60 sec.

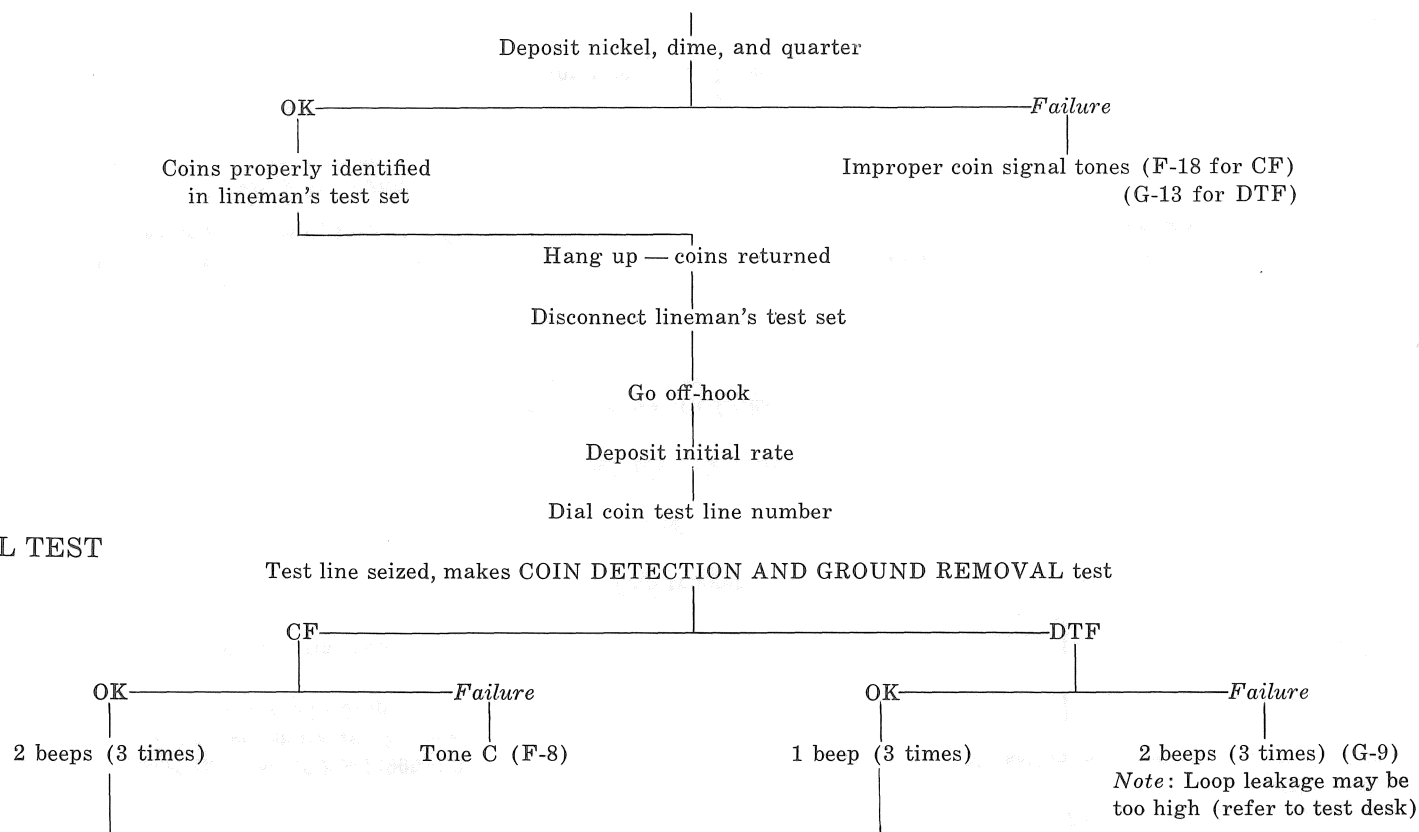
# LEGEND

CF — Coin First  
DTF — Dial Tone First  
(F-7) — Table F,  
Trouble No. 7  
In Coin Maintenance  
Check Booklet,  
Issue 2  
(Typical)

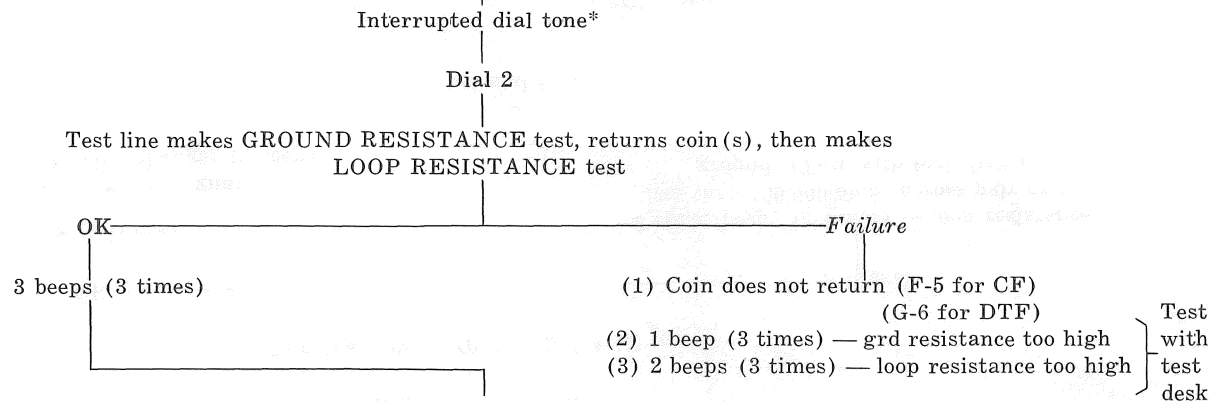
## SINGLE SLOT COIN TELEPHONE SETS



# COIN DETECTION GROUND REMOVAL TEST

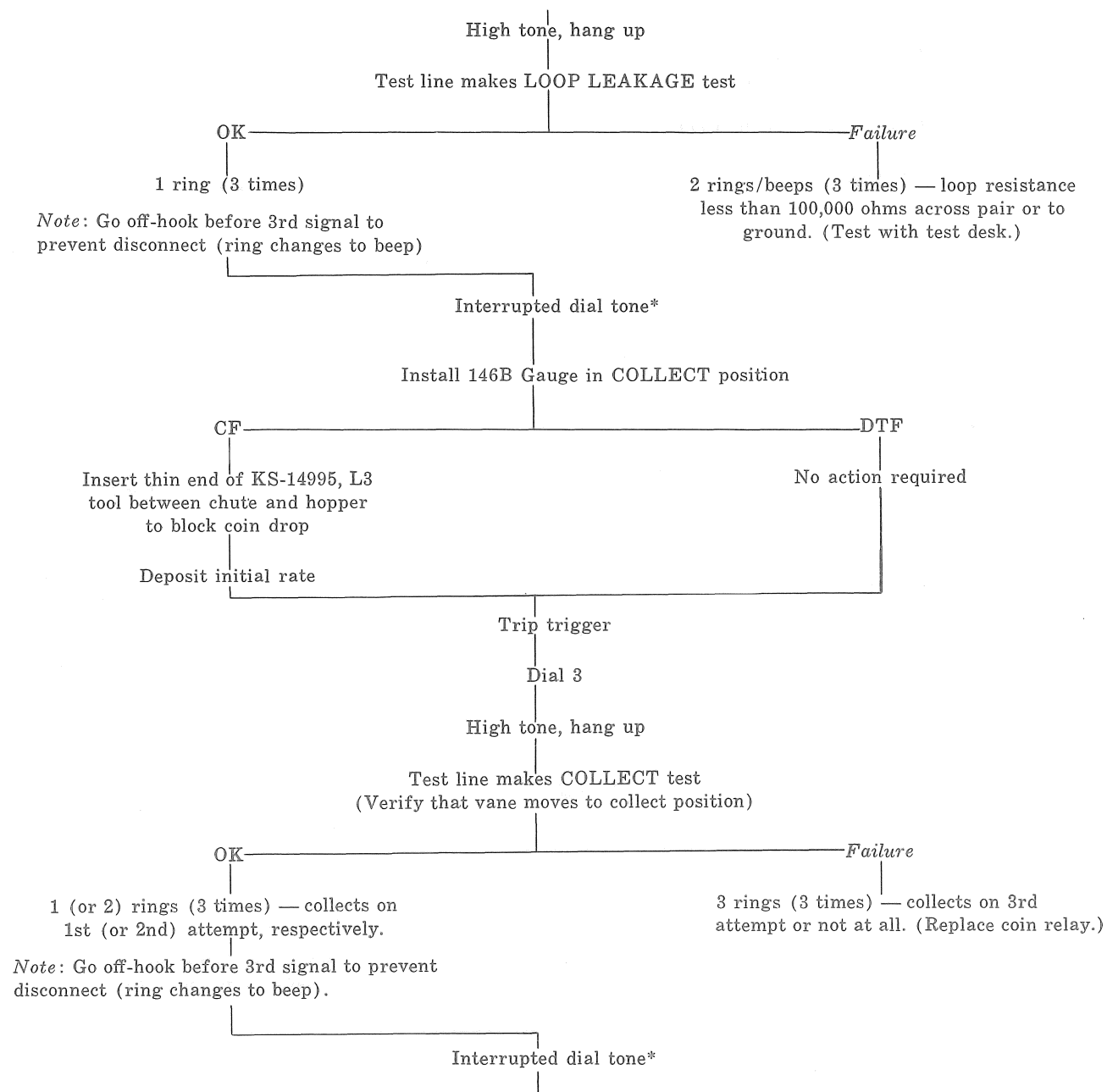


# GROUND & LOOP RESISTANCE AND LOOP LEAKAGE TESTS



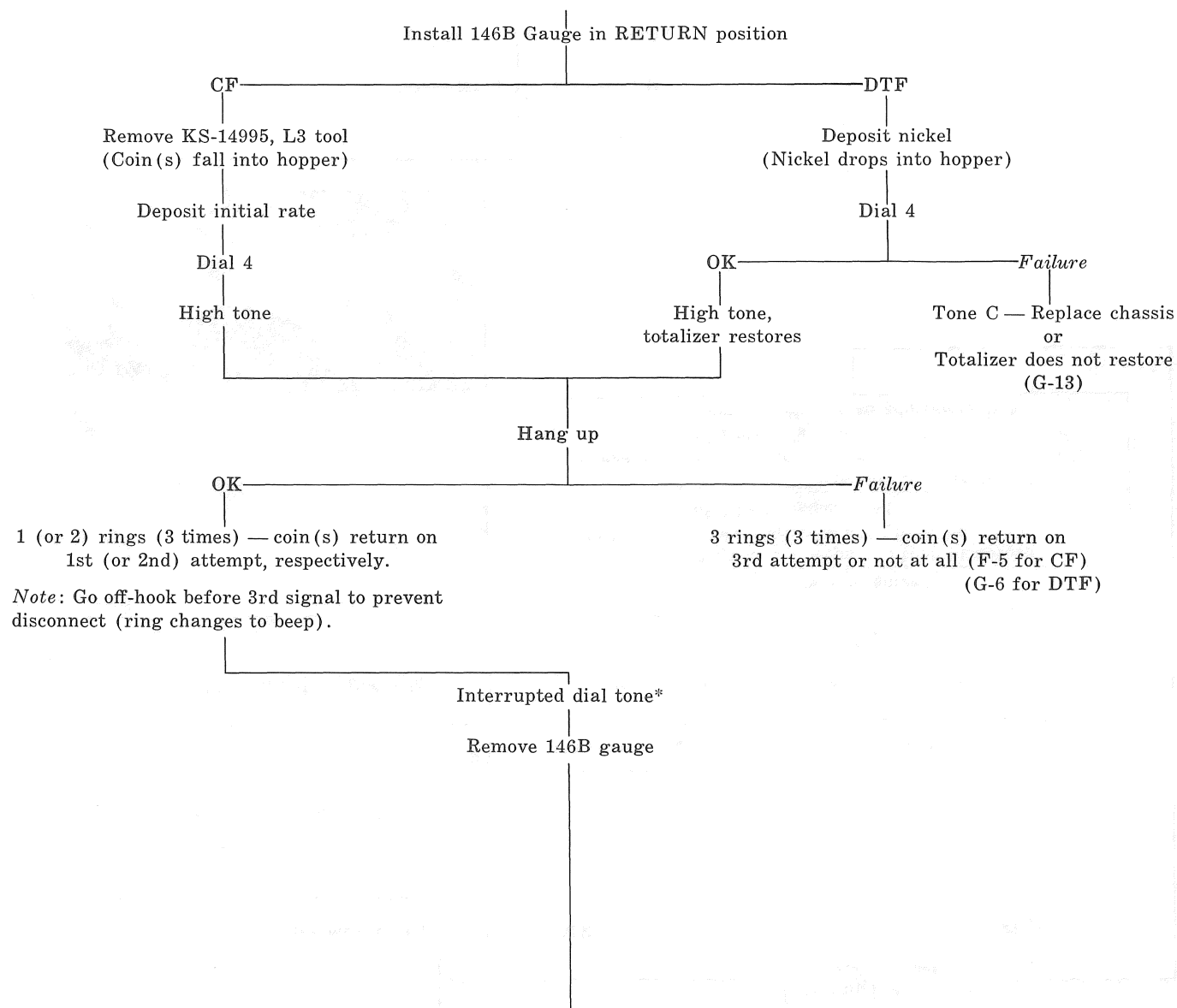
\*Tones time out in 60 sec.

## COLLECT TEST



\*Tones time out in 60 sec.

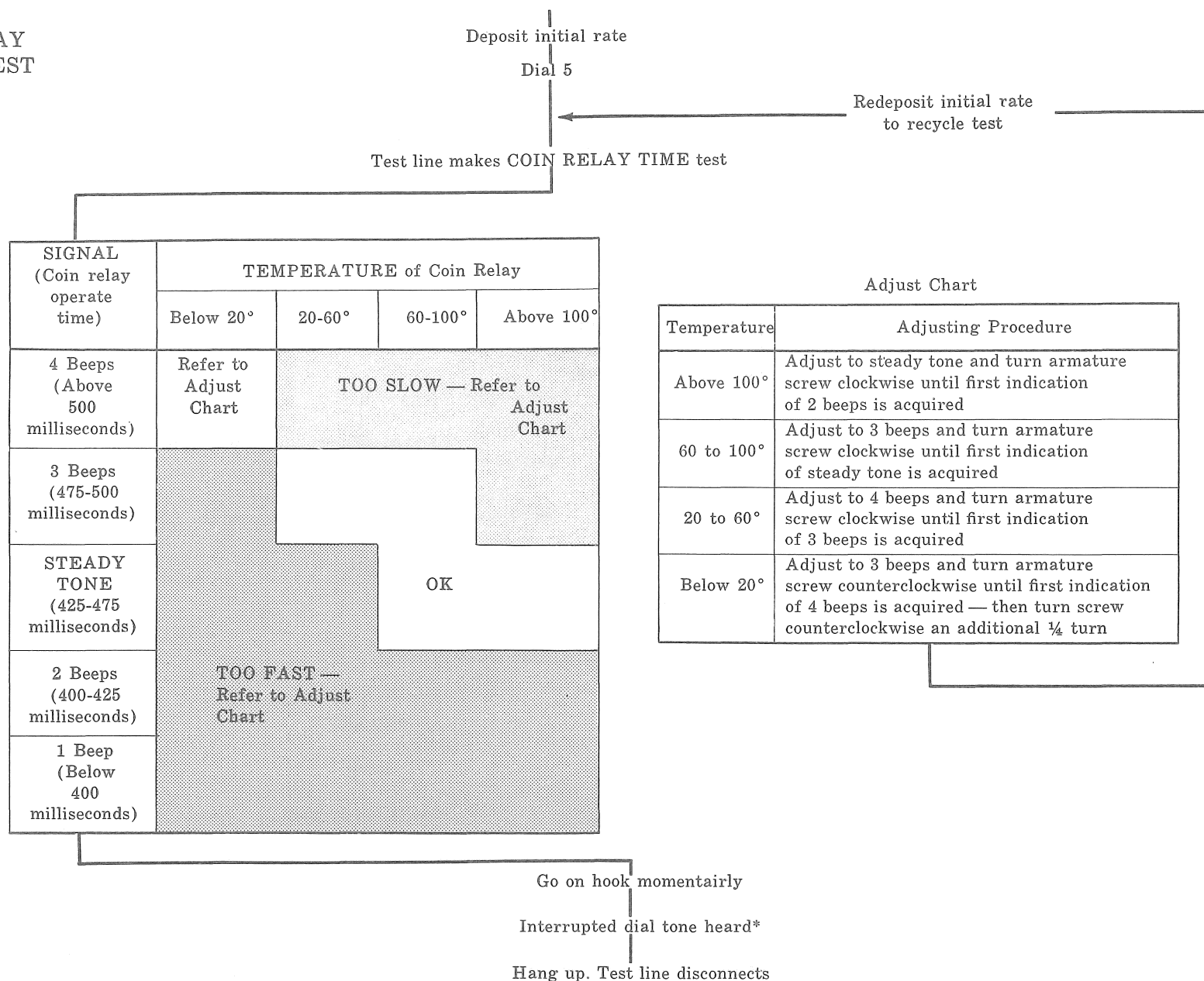
RETURN TEST  
(AND AUTOMATIC  
NICKEL LOCAL  
OVERTIME TEST  
DTF only)



\*Tones time out in 60 sec.



# COIN RELAY TIMING TEST



\*Tones time out in 60 sec.

## SERVICE

### SECURITY DEVICES

#### 1. GENERAL

**1.01** This section contains identification and installation information on security devices for coin collectors and coin telephone sets.

**1.02** This section is reissued to:

- Revise information on coin relay antidrill guard assembly and dust cover
- Add information on 840360184 knob and shaft assembly

**1.03** Security devices are added to standard equipment to discourage thievery, vandalism, and strong arm attack.

#### 2. SECURITY DEVICES

**2.01** Security devices include locks, studs, special backplates, covers, ring seals, armored cords, a switchhook kit, and special tools needed to handle them.



*Locks and keys will be shipped only on orders that specify authorized recipients.*

##### Upper Housing and Cover Assembly Locks

**2.02** Two models of locks may be used for upper housings and cover assemblies: the 10-type and 29-type (Fig. 1). Both are lever tumbler-type locks requiring a corrugated key.

**2.03** The 10-type lock has been used in upper housing assemblies of 190 and 200 series coin collectors.

**2.04** The 29-type lock is used in cover assemblies of 1- and 2-type coin telephone sets and in 235- and 1235-type coin collectors.

##### KS-19277 Lock and Associated Parts

**2.05** The KS-19277 lock and associated parts (Fig. 2) give additional security to the upper housing. They consist of a screw type lock and appropriate fasteners which secure an upper housing to either backplate or mounting surface.

**2.06** The lock mounts in a specially provided hole in the lower right side of the upper housing (Fig. 3) and is held in place by a spring steel washer and heavy steel nut (Fig. 4). Use of a tubular key permits the back of the lock to rotate and screw onto the end of a security bolt or stud fastener.

**2.07** The lock cannot be used on coin collectors equipped with 2-coil relays, those not having a lower right security stud hole, or panel coin phones.

**2.08** The P-13A091 (BKX) terminal assembly (Fig. 5) must be replaced with a P-25E300 terminal assembly to provide clearance of fasteners (Fig. 6 and 7).

**2.09** One of three different fasteners may be used with the KS-19277 lock (Fig. 2).

- (a) P-25E301 bolt fastener—short shoulder; for use with 3/16-inch thick backboards.
- (b) P-25E302 bolt fastener—long shoulder; for use with 5/16-inch thick backboards.
- (c) P-25E303 stud fastener—for use where security studs are not required.

**2.10** Two methods can be used to determine if existing coin collector backboards are equipped with keyhole slots without removing the coin collector from its mounting:

- If a security stud is present in the lower right security stud hole of the backplate (Fig. 5), the appropriate bolt fastener (2.09)

may be installed in place of the security stud.

- If there is no security stud in the lower right security stud hole of the backplate, place a small-bladed screwdriver in the hole (Fig. 8). If blade enters to a depth of at least 3/4-inch, a keyhole slot is present in the backboard (Fig. 9) and the appropriate bolt fastener can be used.

**2.11** Use of bolt fasteners is limited by the surface (backboards, shelf, or booth) upon which the coin collector is mounted.



*In vulnerable locations where prying of upper housing is likely, always use bolt fastener where possible.*

**2.12** The P-25E301 and P-25E302 bolt fasteners screw from the rear into the lower right security stud hole of the coin collector backplate (Fig. 7). The coin collector is installed in the same manner as any other coin collector equipped with security studs.

**2.13** To install a bolt fastener at existing installions, disconnect and remove the coin collector from its mounting.

**2.14** Use the P-25E303 stud fastener (Fig. 6) where a bolt fastener is not required, but where protection is desired against unauthorized use of the 10-type upper housing key.

**2.15** The stud fastener can be installed without removing the backplate assembly from its mounting surface.

**2.16** Use a P-25E351 insulator on either the bolt or stud fastener (Fig. 6 and 7) to prevent it from grounding against the lower lug of the housing contacts. To install, start at the BKX terminal and wind in "barber pole fashion" around the stud or bolt. Do not cover the threads on the exposed end of the stud or bolt. Redress wiring to upper housing contacts (Fig. 10).

**2.17** After the bolt or stud fastener is properly installed, fasten upper housing as follows:

- (a) Insert the tubular key into the KS-19277 lock.

- (b) Apply and maintain a slight forward pressure on the key while rotating it in a clockwise direction ***until the key is hand tight***. Do not force the key beyond this point. To remove the key, maintain a forward pressure, turn counterclockwise to the first release position and pull the key away from the lock.



*Do not use pliers or other unauthorized tools on the handle of the key. Do not file tab off end of key. Once the upper cover assembly has been drawn to the backplate assembly so that the upper cover assembly lock can be engaged, there is no need to further tighten the KS-19277 lock.*

**2.18** When an upper housing is equipped with a KS-19277 lock and is removed for maintenance, apply a coating of KS-19094 antiseize compound to the threaded area of the bolt or stud fastener which engages the security lock to prevent binding or "freezing" of parts.

### Security Studs

**2.19** Security studs provide added strength to the mounting of a coin collector or coin telephone set on a backboard. Four versions are available as shown in Fig. 11.



*Security studs can be used only if the backboard has key-hole slots which align with the coin collector security stud mounting holes.*

**2.20** The P-10E070 and P-12E798 studs are used with the 190, 200, and 1200 series coin collectors and panel coin phones. The P-40Y060 and P-40Y061 studs are used with the 1A- and 1C-type coin telephone sets.

**2.21** Security studs with long shoulders are used with 5/16-inch thick backboards. Those with short shoulders are used with 3/16-inch thick backboards.

### 719A Tool

**2.22** A 719A tool (Fig. 12) is required to release or engage the locking mechanism on both of the 1- and 2-type coin telephone sets and 235/1235-type coin collectors.

## 1A Backplate

**2.23** The 1A backplate made of sheet steel (Fig. 13), is intended for use on coin collectors equipped with aluminum backplates to reduce the possibility of breaking away the lower housing by means of a pry bar.

**2.24** The 1A backplate is provided with clearance holes for security studs and mounting screws. It is fastened to the coin collector backplate by replacing the four lower housing assembly screws with one P-12E799 and three P-13E656 high-strength flathead steel screws (Fig. 14). Replacement screws must be ordered separately.

**Note:** The 1A backplate cannot be used with 139A backboards or 19-type shelves.

## Armored Cords

**2.25** All current coin collectors and coin telephone sets are equipped with armored handset cords (Fig. 15). Transmitter and receiver caps are cemented to the handset handle. Refer to Section 501-210-102 for complete information on handsets.◀

**2.26** Use the following procedures to equip existing coin collectors in the field with G3-type, G13-type, or F1L handset.

- (1) Remove the upper housing from the coin collector.
- (2) Disconnect the handset cord conductors and cord fasteners. Before removing old cord from the cord entrance hole, attach a pull wire to the old cord. This will aid in pulling in the new cord.



**Cover the coin relay, hopper, and return chute with a piece of plastic, cloth, or other suitable material to prevent metal drill shavings from falling into them.**

- (3) Using a small center punch and hammer, mark hole to be drilled and tapped in the coin collector backplate. This hole is to be located in the cord entrance tube halfway between the outer beveled edge of the coin collector and the left edge of the cord chamber (Fig. 16).

- (4) Drill hole with a No. 7 drill (.201 inch).



**When drilling aluminum backplates do not exert too much pressure on drill. This may cause drill to cut too fast, thus making hole oversized.**

- (5) Tap the hole using a 1/4-20 tap with a Greenfield T-Handle tap wrench or equivalent.

**Caution:** The tap wrench should be long enough to permit the wrench handle to be turned without injury to the installer or possible damage to the coin relay.

- (6) Clean metal shavings from the cord entrance hole.
- (7) Using the pull-in wire placed in step 2, pull in the new cord.

- (8) Remove the pull wire from new cord and fasten a P-12A096 clamp over the cord (Fig. 17).

- (9) A P-26E084 1/4-20 by 5/16-inch self-locking setscrew is used to secure the cord to the coin collector backplate (Fig. 17). A flat surface is located approximately 1/4-inch from the set end of the stainless steel flexible hose. Using a 1/8-inch Allen wrench, screw the socket setscrew into the hole drilled in step 4 until it just makes contact with the flat surface of the metal hose. Give the setscrew a minimum of 1/4 turn and a maximum of 1/2 turn. This should hold the cord firmly in the coin collector.

**Caution:** Screwing the socket setscrew down more than one turn against the steel flexible hose may damage the cord conductors.

- (10) Remove the protective covering placed during drilling and replace the upper housing.

**Caution:** Carefully brush out all metal shavings from the coin collector, and dispose of them so that they will not cause injury or damage equipment.

- 2.27** Refer to Fig. 18 for routing and securing handset cord in 1-type coin telephone sets.

**2.28** Refer to Fig. 19 for routing and securing handset cord in 2-type coin telephone sets.

**2.29** Refer to Fig. 20 for routing and securing handset cord to 235/1235-type coin collectors.

**D-180009 Switchhook Conversion Kit**

**2.30** The D-180009 switchhook conversion kit (Fig. 21) is designed to reduce switchhook blocking and permit a simple adjustment of switchhook travel. The conversion kit can be used for field conversion of 200-type and 1234-type coin collectors.

**2.31** Two types of switchhooks *may be found* in the field: A one-piece switchhook with a long shaft and a two-piece switchhook with a short shaft and an adapter.

**2.32** To remove a one-piece switchhook:

- (1) Remove and retain hex head machine screw, lockwashers, tension spring, switchhook arm assembly, and any spacing washer that may be present, from right end of shaft (Fig. 22).
- (2) Slide switchhook to the left and out of bearings.

**2.33** If coin collector is mounted in a corner, a one-piece switchhook may be removed without removing the coin collector from backboard as follows:

- (1) Perform operations outlined in 2.32 (1).
- (2) Place the larger notch of a 710A bending tool on the switchhook hub as shown in Fig. 23, View A. Apply force on the tool as shown and move the switchhook out, bending it slightly.
- (3) Having partially bent the shaft, move the switchhook to the left. Place the smaller notch of the bending tool over the shaft as shown in Fig. 23, View B. Apply force on the tool as shown.
- (4) Continue moving the switchhook to the left and applying additional bends as needed to remove the switchhook.

**2.34** To remove a two-piece switchhook:

- (1) Perform operations outlined in 2.32 (1).

(2) Loosen the flathead screw which secures P-12E828 adapter (Fig. 24) to the switchhook shaft.

(3) Slide switchhooks to left and out of bearing.

(4) Slide adapter to left and out of bearing.

**2.35** Remove wire guide clamp (Fig. 22).

**2.36** To install new switchhook kit:

(1) Install P-20F161 wire guide clamp (Fig. 25) on backplate. Ensure that wiring is routed as shown.

(2) Select correct bushing (Fig. 21) and slide over shaft of switchhook.

(3) Secure bushing on shaft with a cotter pin (Fig. 26).

(4) Slide the P-20F155 adapter assembly into right bearing (Fig. 26).

(5) Slide switchhook assembly with bushing installed through left bearing to mate with adapter assembly.

(6) Secure adapter to shaft with hex socket head cap screw (Fig. 27) which is furnished with kit.

(7) Install P-297872 spring washers as required to reduce excessive end play. End play of switchhook shaft shall not exceed 1/32-inch.

(8) Place switchhook arm assembly (Fig. 28) retained in 2.32 over switchhook shaft and secure to end of adapter shaft with lockwasher and hex head machine screw. Install tension spring.

**2.37** Adjust switchhook travel with the two adjusting screws (Fig. 28) to meet contact spring pile up requirements and check switchhook operation per Section 506-310-100.

**2.38** Ensure that all wires are clear of adapter travel and adjusting screws.

### Coin Relay Guard Assembly

**2.39** A special case-hardened steel antidrill guard assembly (KS-20892) is available to prevent fraudulent operation of coin relay in single slot coin telephone sets (Fig. 29). The guard assembly must be ordered separately.

**2.40** When the antidrill guard assembly is used, the existing coin relay plastic dust cover must be trimmed to fit around the guard assembly. Trim the dust cover per Fig. 30 using electrician scissors or side cutters.

**Note:** Currently manufactured dust covers are provided with guide lines to follow when cutting. When these lines are provided, disregard Fig. 30.

**2.41** Secure the antidrill guard assembly to the set using the existing return chute assembly mounting screw (Fig. 29).

### 840360184 Knob and Shaft Assembly

**2.42** The 840360184 knob and shaft assembly (Fig. 31) is designed as a replacement for the lever-type coin release handle and shaft assembly on single slot coin telephone sets in areas where a high rate of vandalism has resulted in serious damage to internal linkage and other chute actuating components.

**2.43** A built-in clutch arrangement ensures that the chute actuating components are neither damaged nor destroyed if the knob is forcibly turned beyond its normal rotational limit.

**2.44** Notches and indentations on the sloped turning surface minimize slippage of the fingers.

**2.45** To replace the lever-type coin release with the knob-type (Fig. 32):

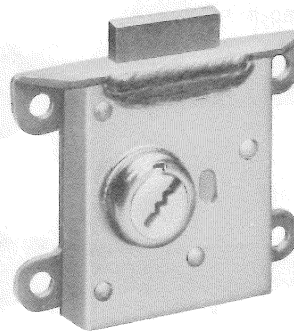
- (1) Remove cover unit assembly (1-type set) or open door and faceplate assembly (2-type set).
- (2) Remove and retain RM-651418 screw which secures link and lever assembly to coin release lever shaft. Remove lever and shaft assembly.

- (3) Insert knob and shaft assembly and ensure that arrow on knob is oriented as shown.

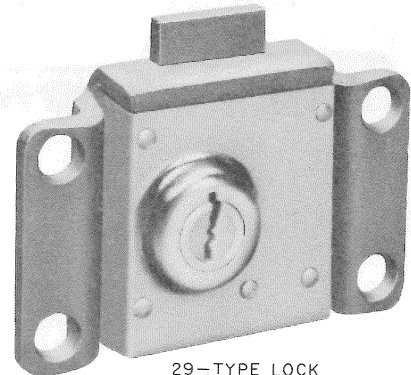
- (4) On a panel coin telephone set, the steel spacer must be used.

**Note:** Do not use spacer on a 1-type set.

- (5) Place link and lever assembly over rear of shaft and secure with the RM-651418 screw retained in (2).



10-TYPE LOCK



29-TYPE LOCK

**Fig. 1—Upper Housing and Cover Assembly Locks**

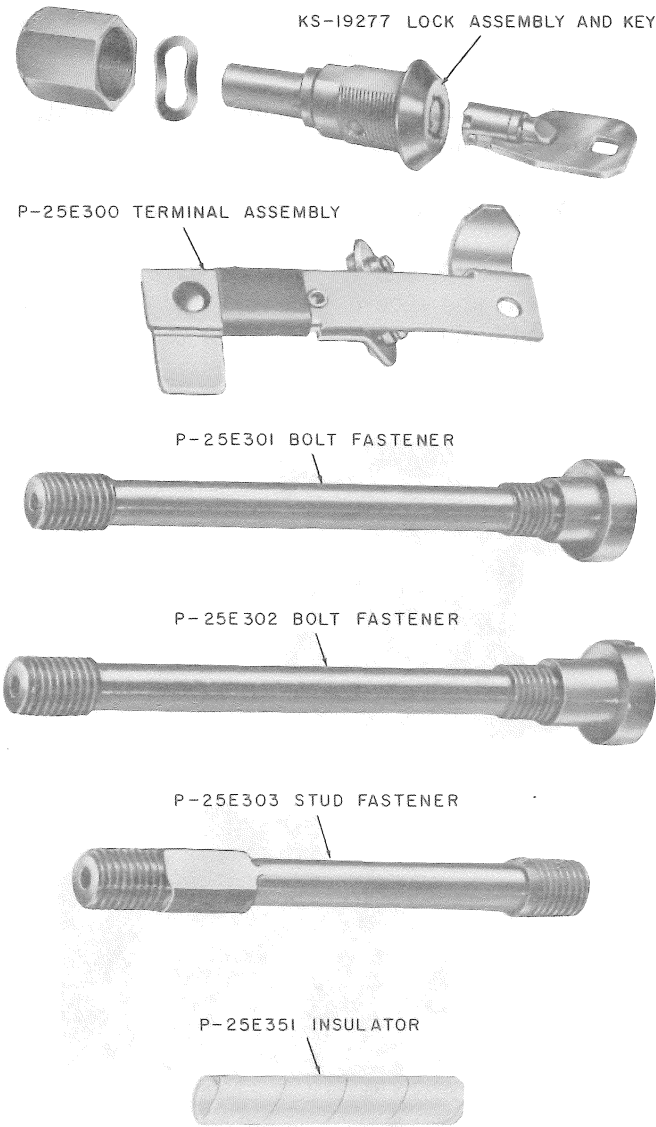


Fig. 2—KS-19277 Lock and Associated Parts

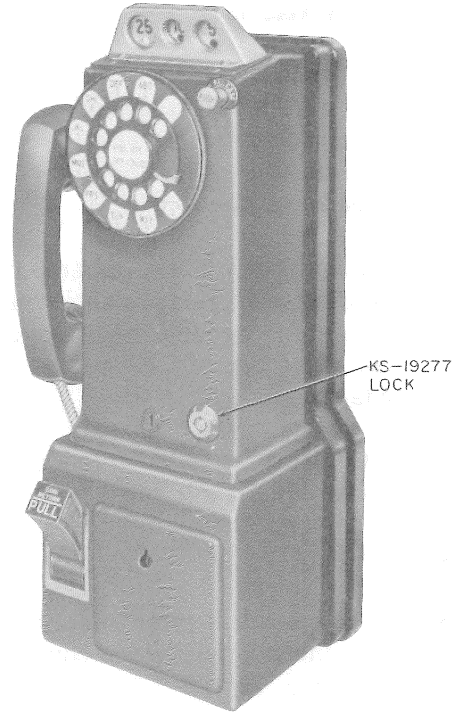


Fig. 3—Coin Collector Equipped With KS-19277 Lock

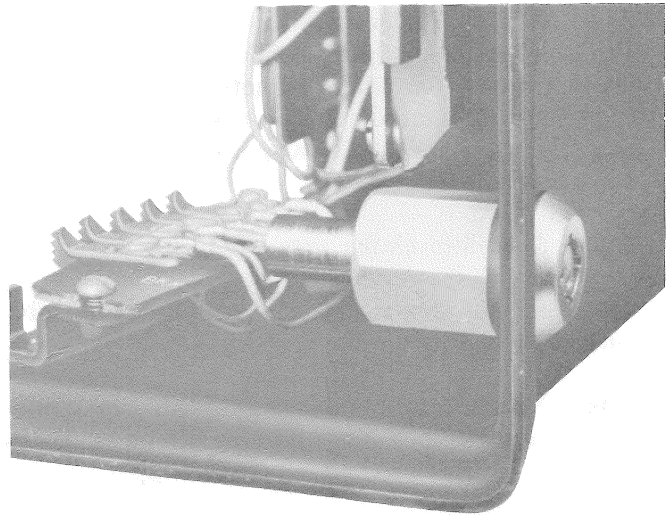
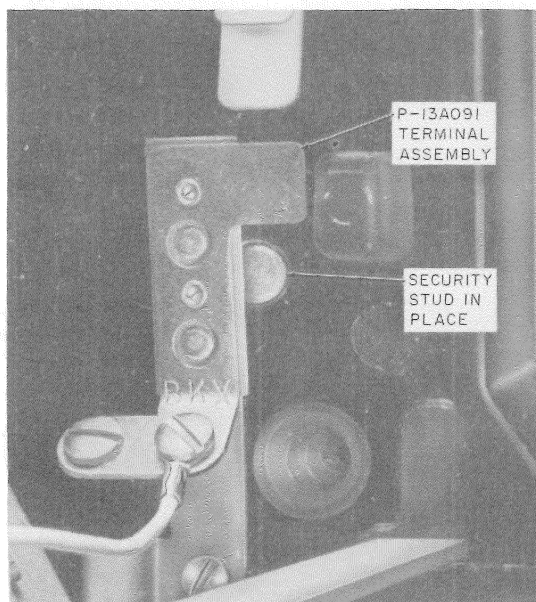
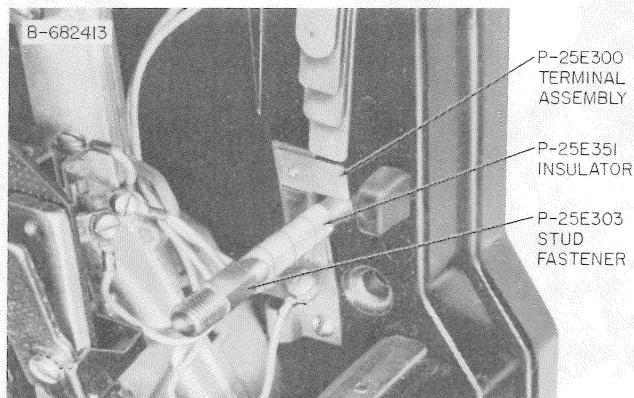


Fig. 4—KS-19277 Lock Installed in Upper Housing



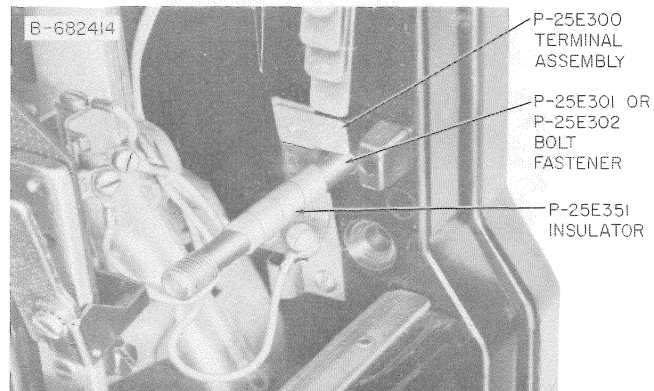


**Fig. 5—P-13A091 Terminal Assembly with Security Stud Installed**

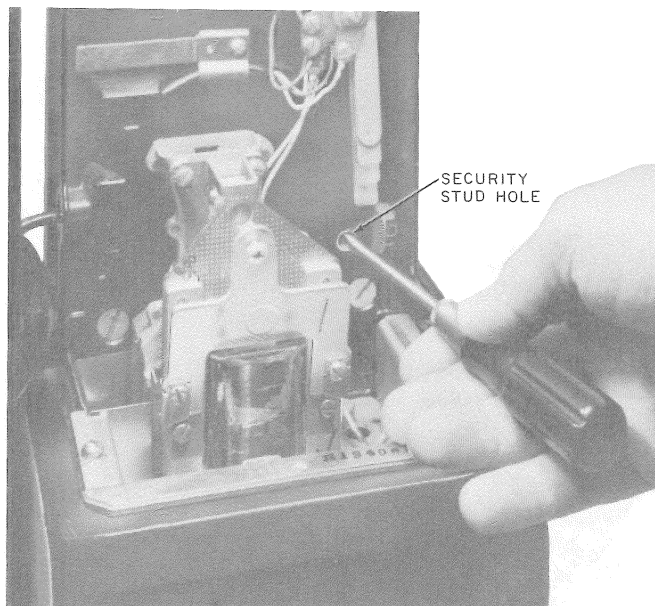


**Fig. 6—Terminal Assembly, Insulator, and Stud Fastener**

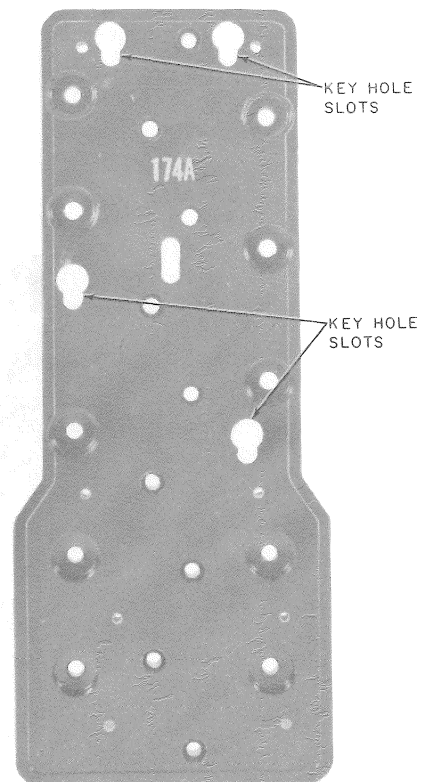




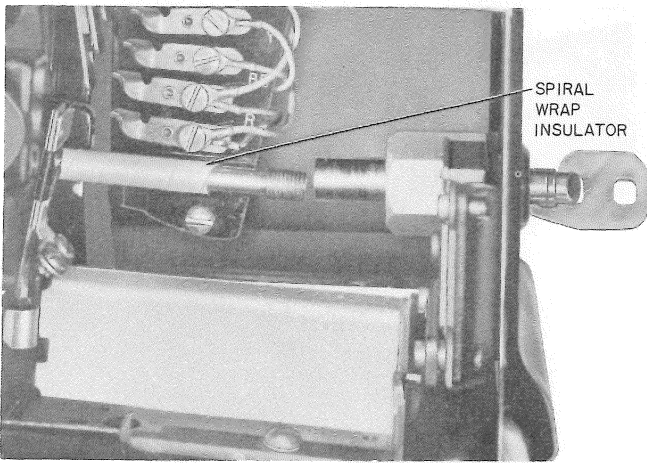
**Fig. 7—Terminal Assembly, Insulator, and Bolt Fastener**



**Fig. 8—Determining Presence of Keyhole Slots**



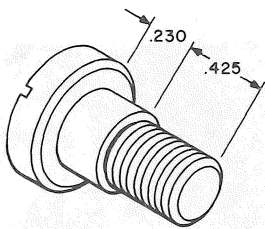
**Fig. 9—174A Backboard with Keyhole Slots for Security Studs and Bolt Fastener**



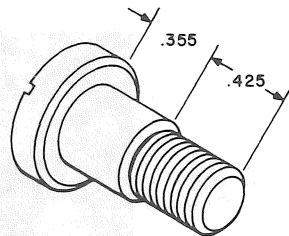
**Fig. 10—Cutaway Section of Upper Housing Showing Mating of Bolt Fastener and KS-19277 Lock**

NOTE:

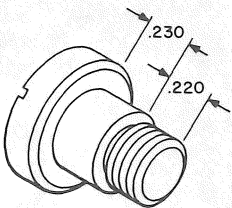
ALL DIMENSIONS SHOWN ARE IN INCHES.



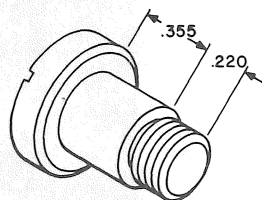
**P-10E070**



**P-12E798**

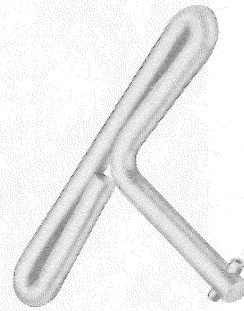


**P-40Y060**

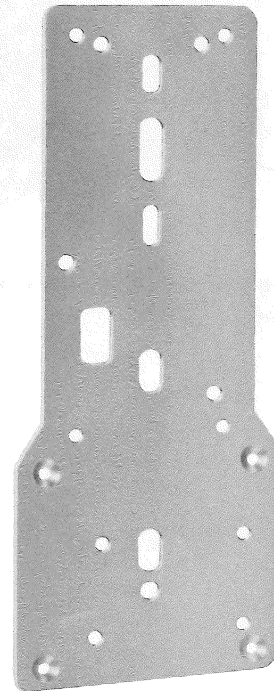


**P-40Y061**

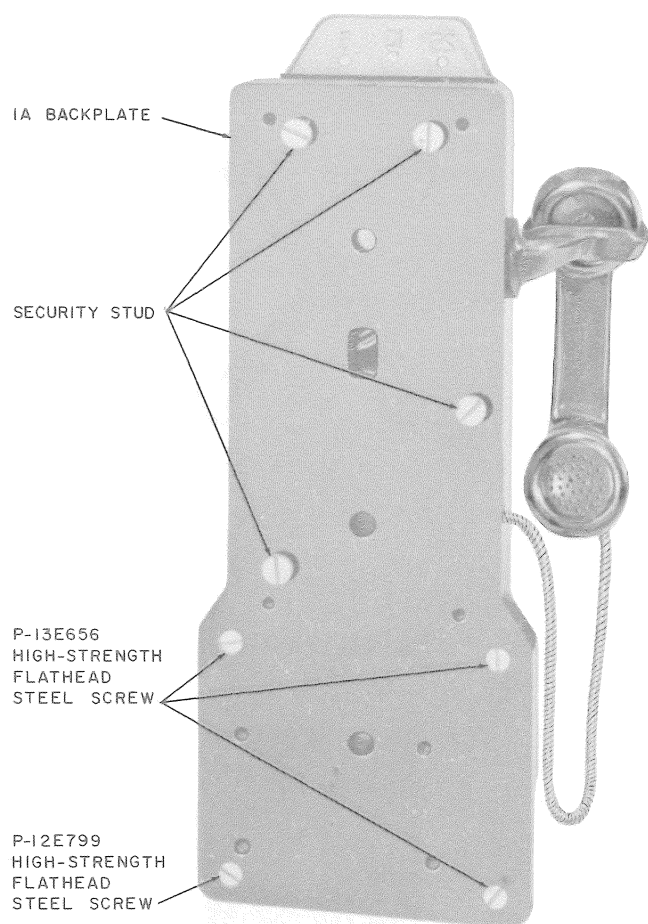
**Fig. 11—Security Studs**



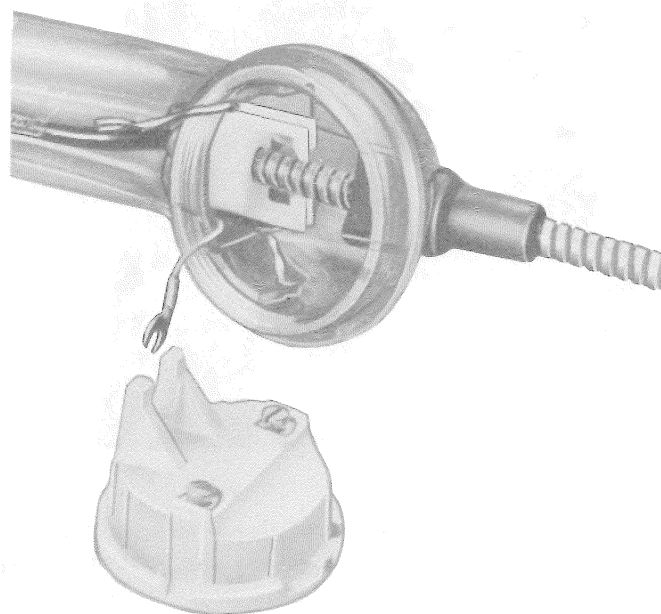
**Fig. 12—719A Tool**



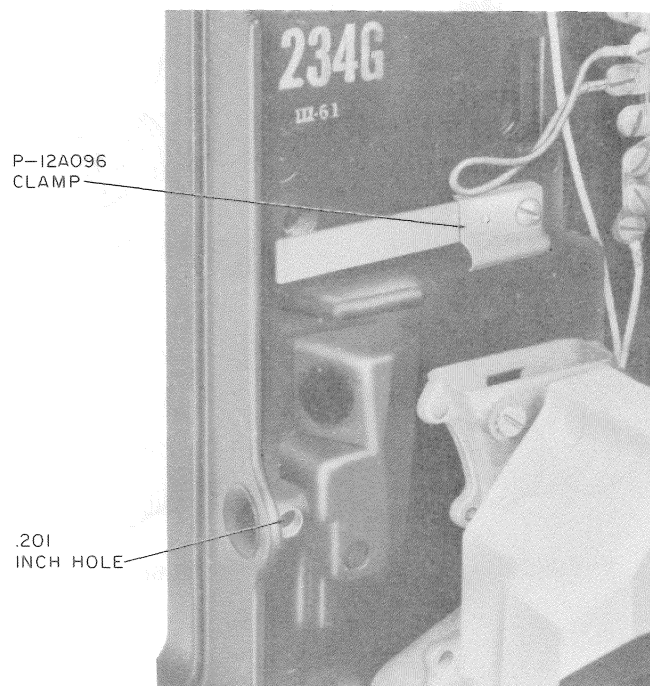
**Fig. 13—1A Backplate**



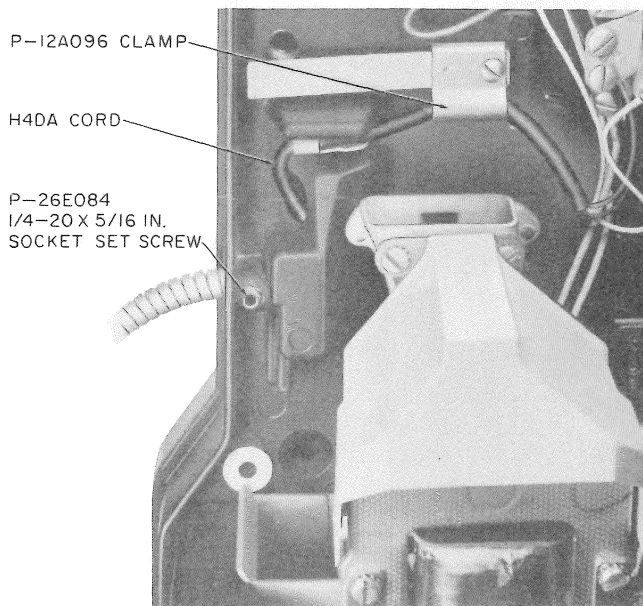
**Fig. 14—Rear View of Coin Collector with 1A Backplate Attached**



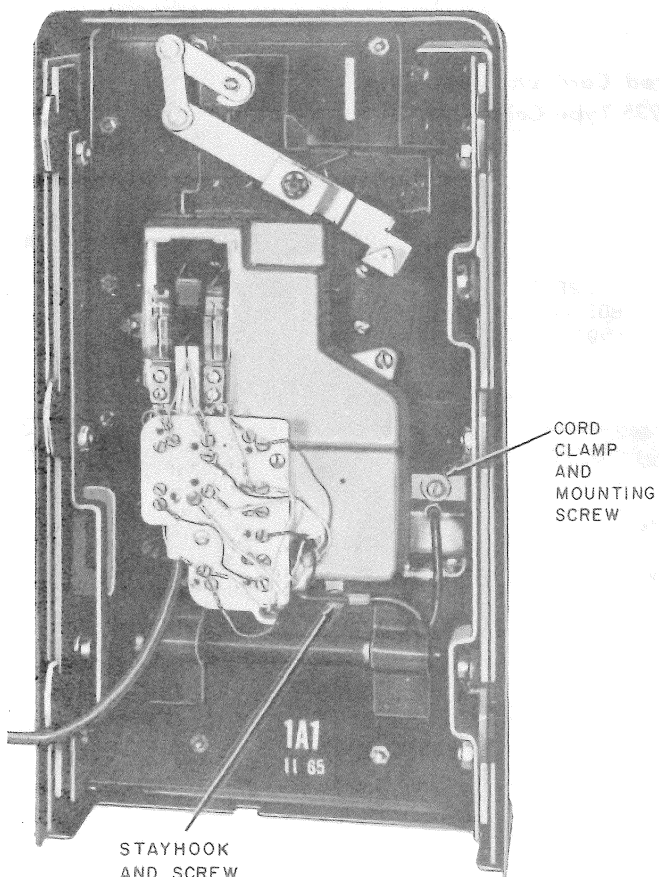
**Fig. 15—Handset with Armored Cable**



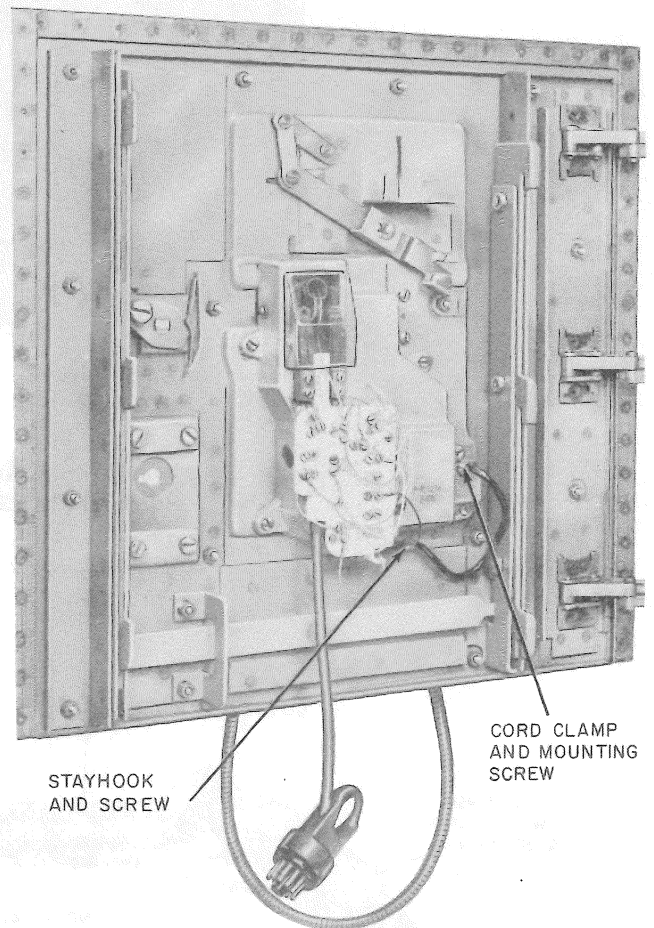
**Fig. 16—Location of .201 Inch Hole**



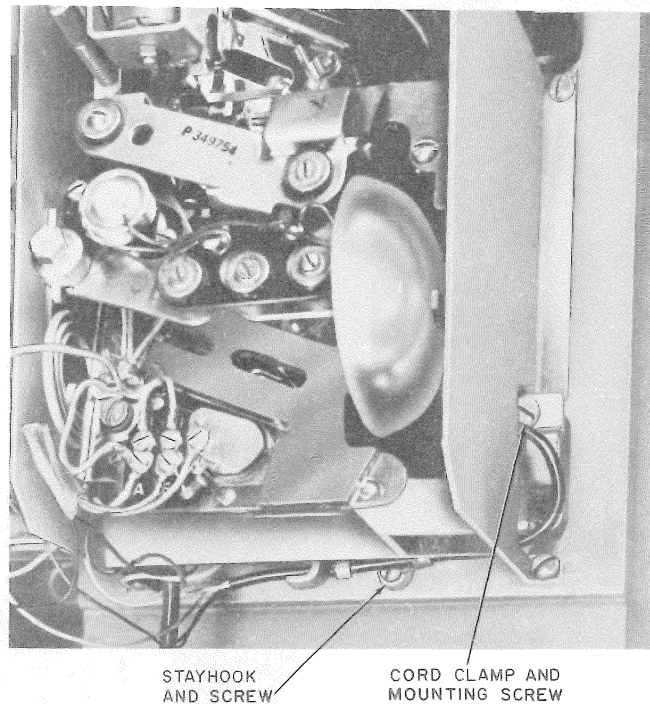
**Fig. 17—Installation of Armored Cord**



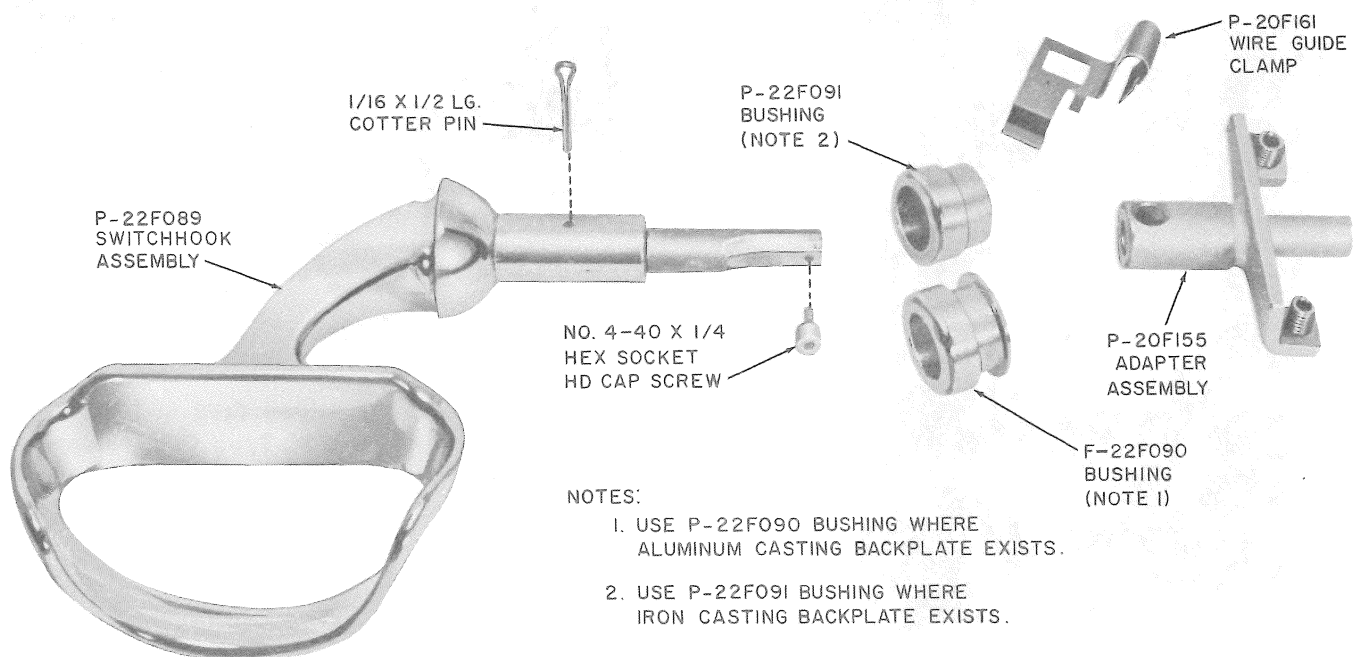
**Fig. 18—Location of Armored Cord Mounting Hardware in 1A/1C-Type Coin Telephone Set**



**Fig. 19—Location of Armored Cord and Mounting Hardware in 2A/2C-Type Coin Telephone Set**

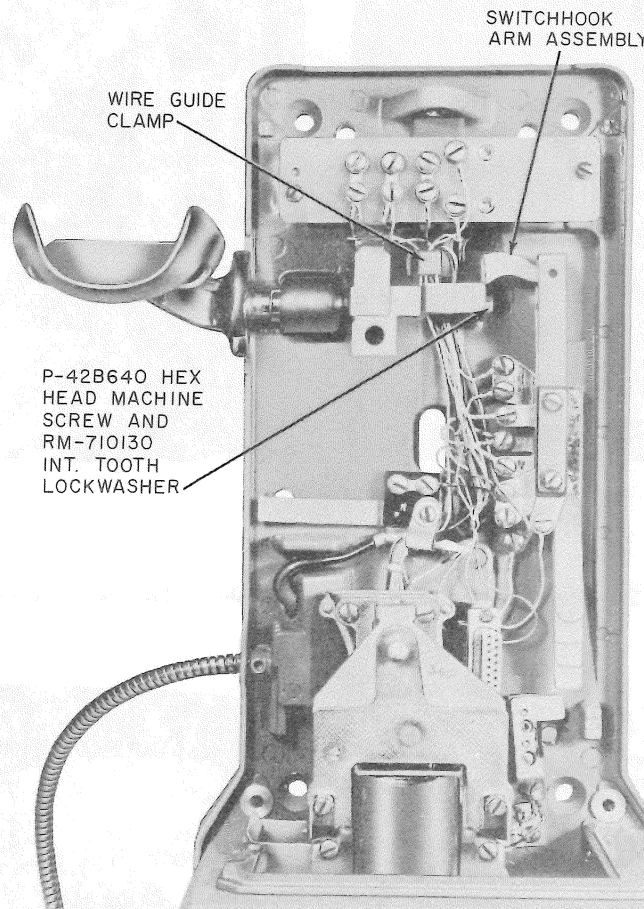


**Fig. 20—Location of Armored Cord and Mounting Hardware in 235/1235-Type Coin Collector**

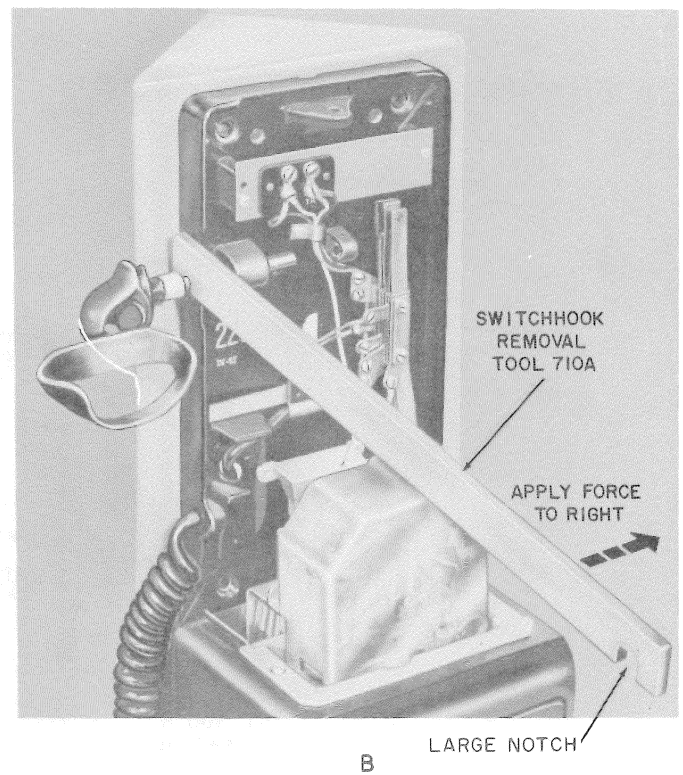
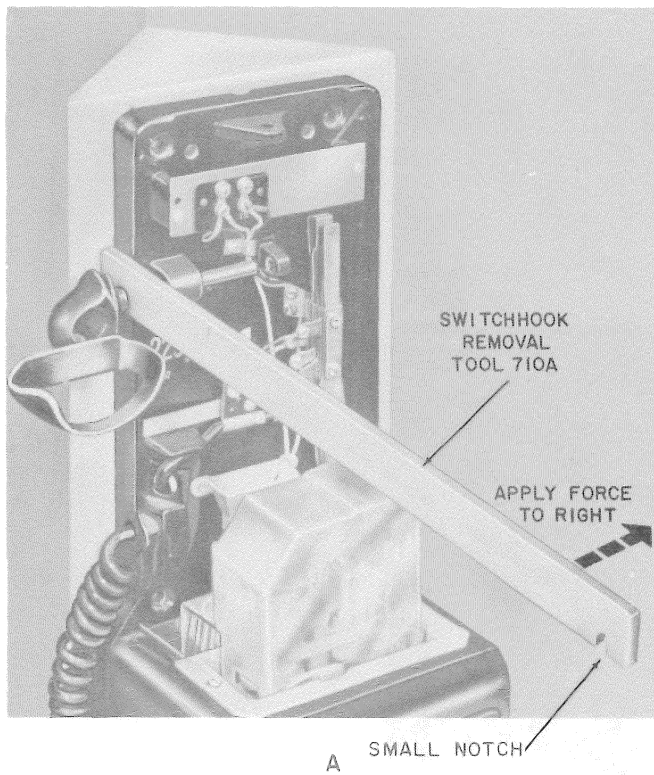


**Fig. 21—D-180009 Switchhook Kit**

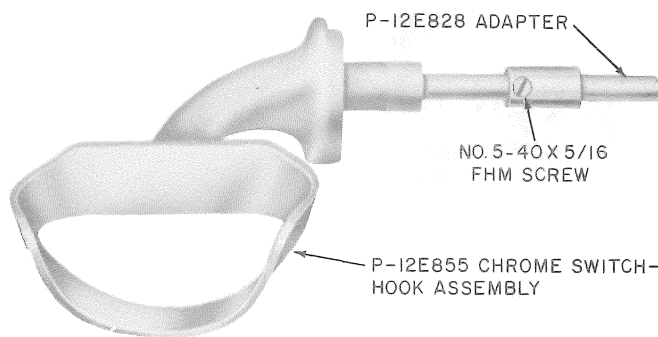




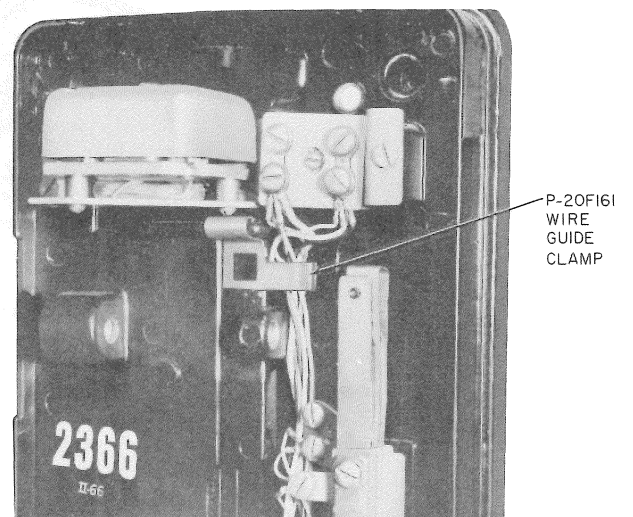
**Fig. 22—Switchhook Installed**



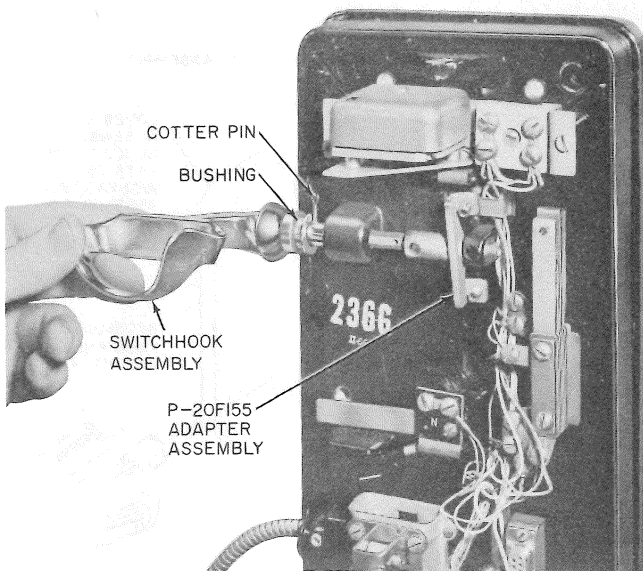
**Fig. 23—Removal of One-Piece Switchhook Located in Corner**



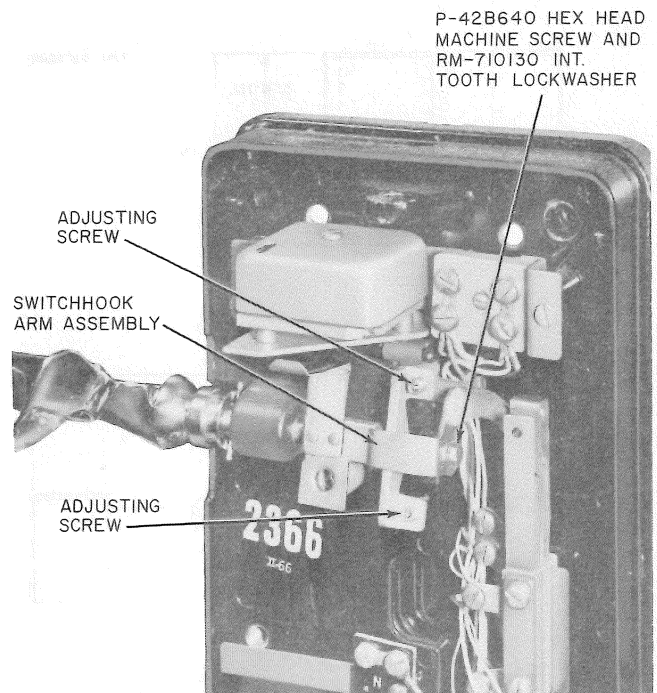
**Fig. 24—Two-Piece Switchhook**



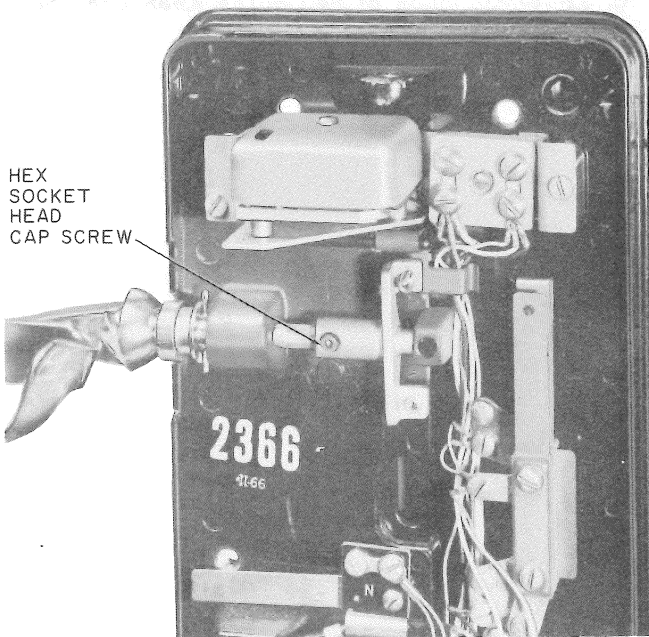
**Fig. 25—Installation of Wire Guide Clamp**



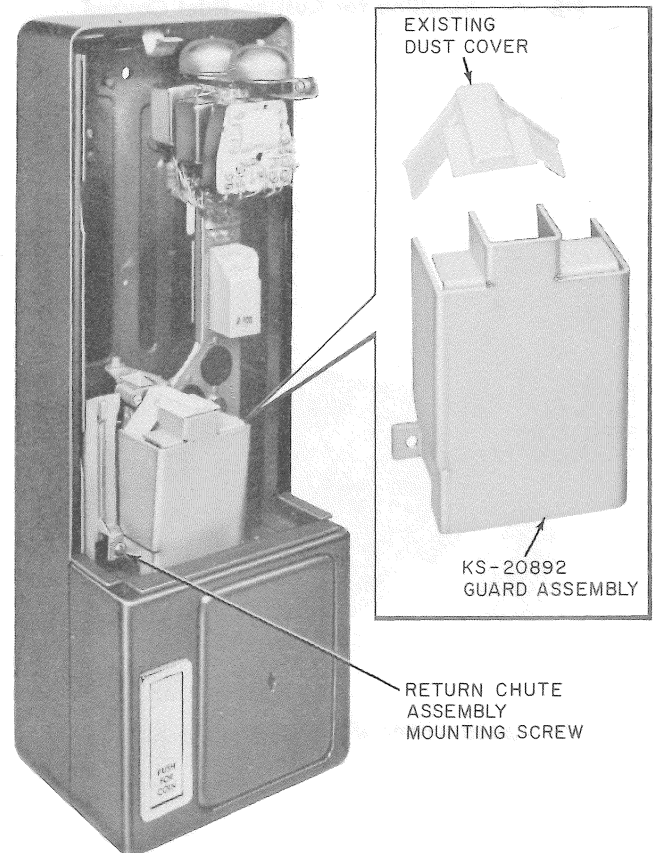
**Fig. 26—Installation of Adapter Assembly and Switchhook Assembly**



**Fig. 28—Installation of Switchhook Arm Assembly**

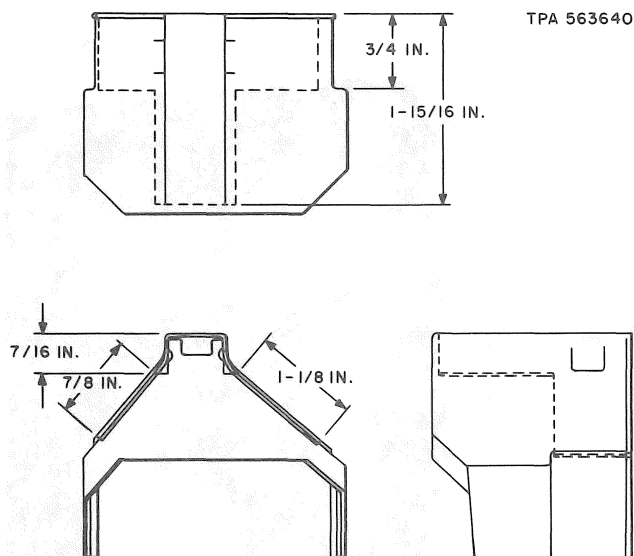


**Fig. 27—Method of Securing Adapter to Switchhook Assembly**



**Fig. 29—Relay Antidrill Guard Arrangement**





NOTES:

1. CUT ON DASHED LINES TO DIMENSIONS SHOWN.
2. CURRENT DUST COVERS ARE PROVIDED WITH DASHED LINES.

Fig. 30—Outline for Cutting Dust Cover

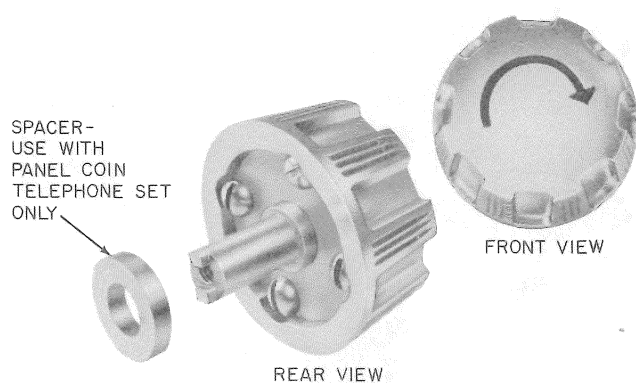
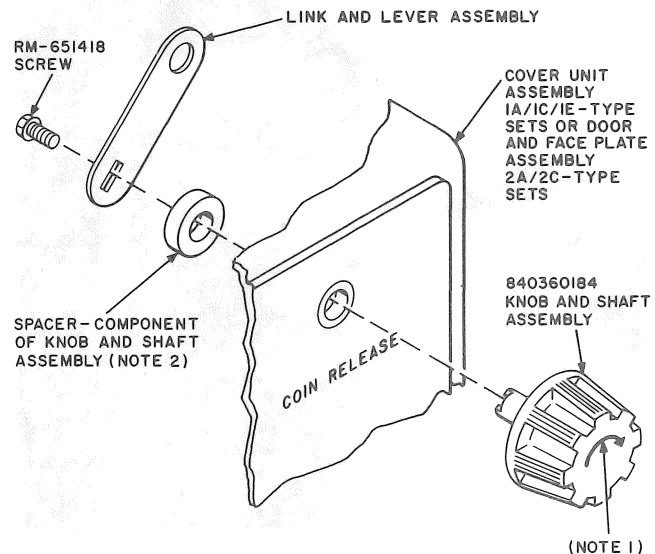


Fig. 31—840360184 Knob and Shaft Assembly



NOTES:

1. INSTALL KNOB WITH ARROW IN THIS POSITION.
2. USE THIS SPACER ON 2A/2C-TYPE SETS ONLY.

TPA 563763

Fig. 32—Installation of 840360184 Knob and Shaft Assembly

**SUBSCRIBER SETS 634A,BA; 684A,BA**  
**COMMON BATTERY—INDUCTION COIL TYPE**  
**USED WITH COIN COLLECTORS**  
**CONNECTIONS**

**TABLE A**  
**CONNECTIONS**

Type of Service	Subscriber Set Connections (Wire or Lead)								
Prepay Manual and Dial Type Coin Collectors	Ringer Lead			Local Wire From Coin Collector					
	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types 155C, D, G, H 166C, D, G, H  Hand Set Types 174C, D, G, H, CS, GS, CT, GT 176C, D, G, H, CS, GS, CT, GT	L1	K	GN	R	BK	L2Y	L1	—	—

Type of Service	Subscriber Set Connections (Wire or Lead) (See Note 1)											
Postpay Manual and Dial (CDO) Type Coin Collectors	Inside Wire from Protector or Line (See Note 2)			Ringer Lead		Local Wiring to Coin Collector						
	R	GN	Y	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types Manual 150K, L 162A, B, C, D Hand Set Types Manual 152C, D 164C, D <div style="display: inline-block; vertical-align: top; margin-left: 20px;">             Dial              158G, H              168G, H               Dial              177G, H              178G, H           </div>	L1	L2Y	—	L1	K	GN	R	BK	L2Y	—	—	—

Type of Service	Subscriber Set Connections (Wire or Lead)								
Prepay Dial Type Coin Collectors with Dial Shorting Relay	Ringer Lead			Local Wire From Coin Collector					
	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types D-178457 D-178875  Hand Set Types D-178940 D-178942	E*	K	GN	R	BK	L2Y	E*	L1	—

**Note 1:** Use only 634BA or 684BA (high-impedance ringer) in community dial office.

**Note 2:** The line wires are shown terminated in the subscriber set in the table and circuit diagram. When desired by the telephone company, they may be terminated in the coin collector set.

**Note 3:** All connections are shown for individual line, bridged ringing installations. If other ringing arrangements are required, refer to Fig. 1 and Table A of the section entitled Subscriber Sets 634A,BA,C; 684A,BA,C Common Battery, Induction Coil Type Used with Hand Telephone Sets, Connections, for appropriate ringer connections.

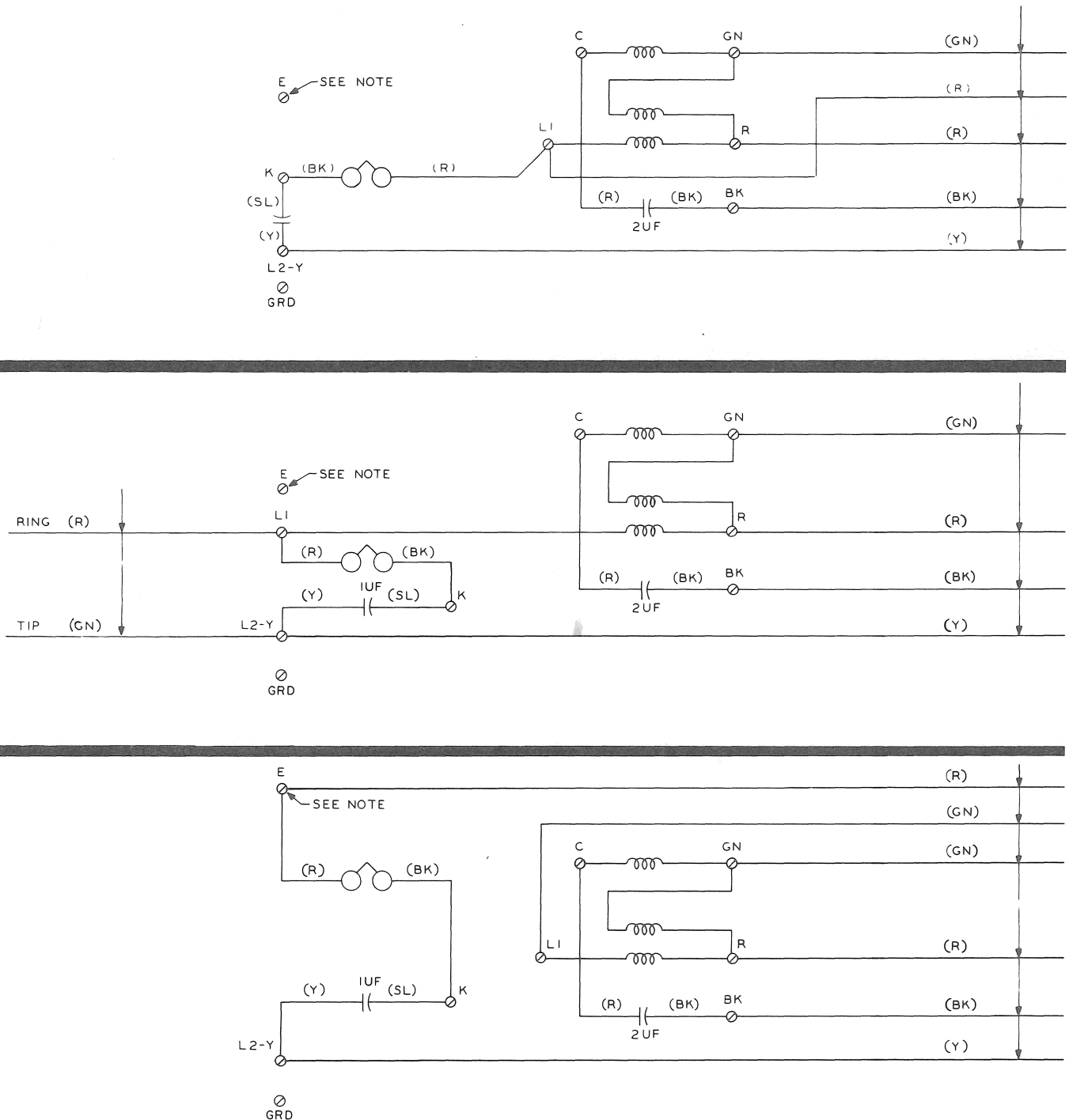
\* For subscriber sets not equipped with E terminal, use the D-161488 connector.

INSIDE WIRE FROM  
LINE OR  
PROTECTOR

RINGING CIRCUIT

TALKING CIRCUIT

LOCAL WIRING



*Note:* When an E terminal is not normally provided in subscriber sets, use D-161488 connector to connect local wiring to R ringer lead.

**Fig. 1 — Circuit Diagram of 634A and BA; 684A and BA Subscriber Sets for Connection with Coin Collectors**



**SUBSCRIBER SETS—634BC AND 684BC**  
**COMMON BATTERY—INDUCTION COIL TYPE**  
**USED WITH COIN COLLECTORS**  
**CONNECTIONS**

**TABLE A**  
**CONNECTIONS**

Type of Service	Subscriber Set Connections (Wire or Lead)								
Prepay Manual and Dial Type Coin Collectors	Ringer Lead		Local Wiring to Coin Collector						
	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types 155C, D, G, H 166C, D, G, H  Hand Set Types 174C, D, G, H, CS, GS, CT, GT 176C, D, G, H, CS, GS, CT, GT	L1	RR	GN	R	BK	L2Y	L1	—	—

Type of Service	Subscriber Set Connections (Wire or Lead)											
Postpay Manual Type Coin Collectors	Inside Wire from Protector or Line*			Ringer Lead		Local Wiring to Coin Collector						
	R	GN	Y	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types Manual 150K, L 162A, B, C, D Hand Set Types Manual 152C, D 164C, D	L1	L2Y	—	L1	RR	GN	R	BK	L2Y	—	—	—

Type of Service	Subscriber Set Connections (Wire or Lead)								
Prepay Dial Type Coin Collectors with Dial Shorting Relay	Ringer Lead		Local Wiring to Coin Collector						
	R	BK	GN	R	BK	Y	R	GN	Y
RCVR-XMTR Types D-178457 D-178875  Hand Set Types D-178940 D-178942	YY	RR	GN	R	BK	L2Y	YY	L1	—

**Note:** All connections are shown for individual line, bridged ringing installations. If other ringing arrangements are required, refer to Fig. 1 and Table A of section entitled Subscriber Sets, 634BC and 684BC, Common Battery, Induction Coil Type Used with Hand Telephone Sets, Connections.

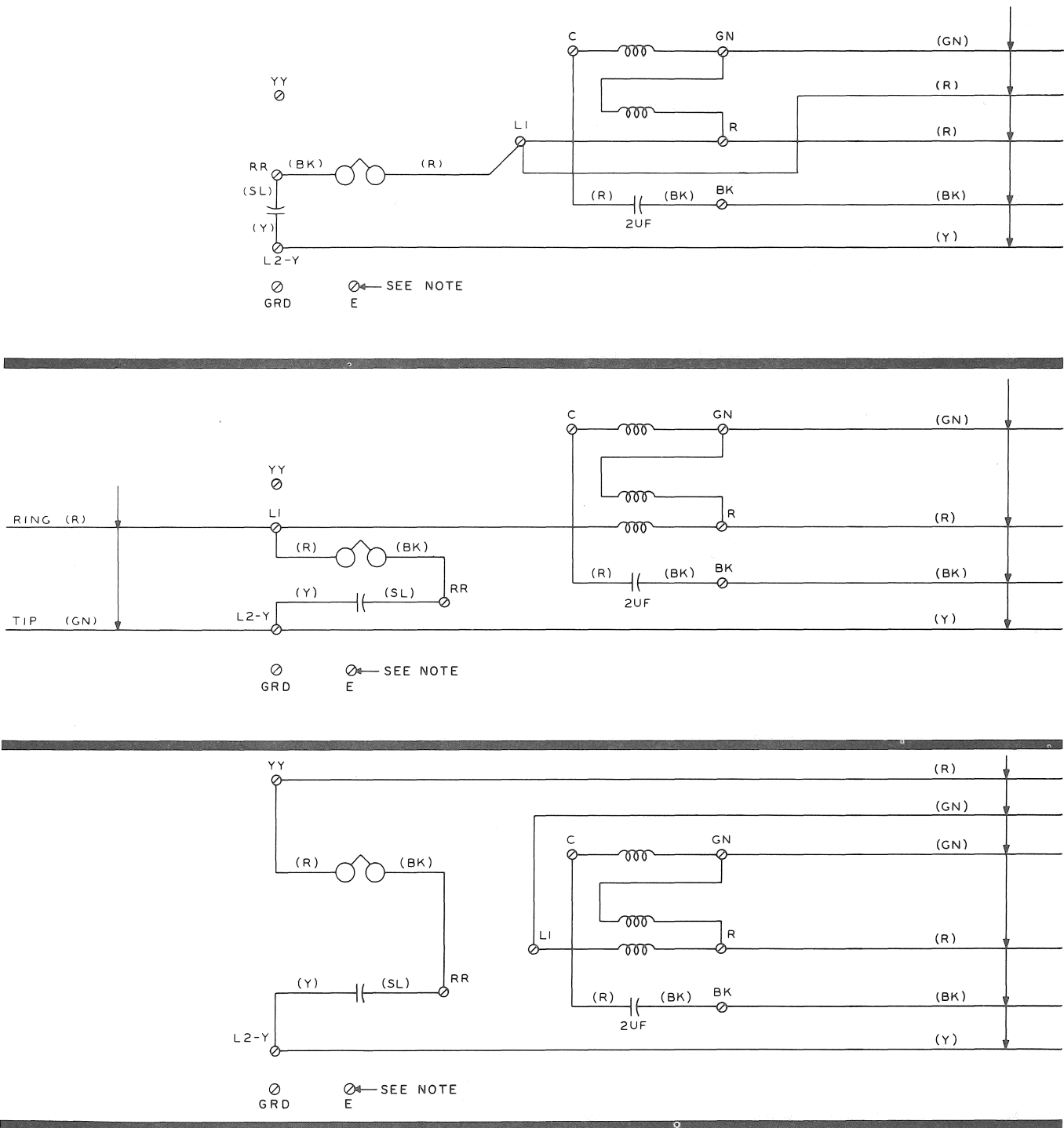
\* The line wires are shown terminated in the subscriber set in the table and circuit diagram. When desired by the telephone company, they may be terminated in the coin collector set.

INSIDE WIRE TO  
LINE OR  
PROTECTOR

RINGING CIRCUIT

TALKING CIRCUIT

LOCAL WIRING



Note: When E terminal is not provided, use D-161488 connector.

Fig. 1 – Circuit Diagram for Connection with Coin Collectors





SUBSCRIBER SETS—634CG, CH, CK, CL; 684CK, CL  
COMMON BATTERY—INDUCTION COIL TYPE—CONNECTIONS

RINGING CIRCUIT                      TALKING CIRCUIT                      LOCAL WIRING

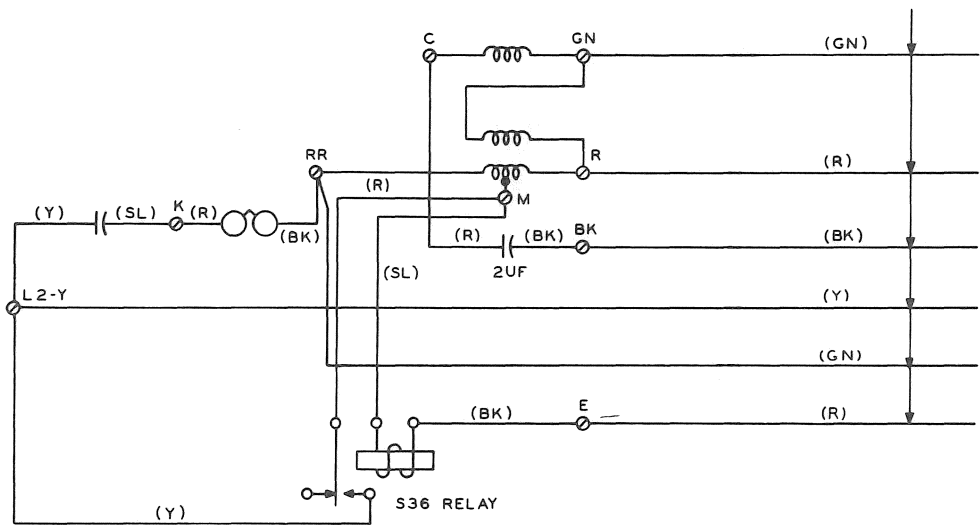


TABLE A—CONNECTIONS FOR LONG LOOPS

Type of Service	Subscriber Set 634CG, CH (Wire or Lead)											
	Ringer Lead		S-36 Relay Lead				Local Wiring from Coin Collector					
	R	BK	R	Y	BK	SL	GN	R	BK	Y	R	GN
Revtr, Xmtr Types 155C, D, G, H 166C, D, G, H												
Hand Set Types 174C, D, G, H 174CS, GS, CT, GT 176C, D, G, H 176CS, GS, CT, GT	K	RR	M	L2Y	E	M	GN	R	BK	L2Y	E	RR

RINGING CIRCUIT                      TALKING CIRCUIT                      LOCAL WIRING

TABLE B  
CONNECTIONS  
FOR REDUCTION  
OF INDUCTIVE NOISE

Type of Service	Subscriber Set 634CK, CL; 684CK, CL (Wire or Lead)							
	Ringer Lead		Local Wiring from Coin Collector					
	R	BK	GN	R	BK	Y	R	GN
Revtr, Xmtr Types 155C, D, G, H 166C, D, G, H								
Hand Set Types 174C, D, G, H 174CS, GS, CT, GT 176C, D, G, H 176CS, GS, CT, GT	K	RR	GN	R	BK	L2Y	E	RR

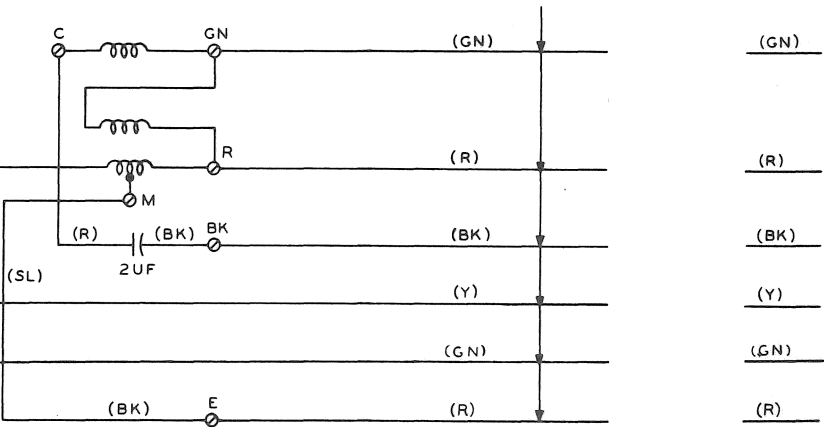


Fig. 1—Circuit Diagram for Connection  
with Coin Collectors



## 685A SUBSCRIBER SETS-USED WITH COIN COLLECTORS

### CONNECTIONS

#### 1. GENERAL

1.01 This section is reissued to:

- Show MD and current wire color codes
- Show MD and current coin collector codes
- Add information on 234G and 1234G coin collectors
- Revise illustrations and tables to reflect above changes

#### 2. CONNECTIONS

2.01 See Fig. 1 and Table A for circuit diagram and connections for prepay manual and rotary-dial coin collectors.

2.02 See Fig. 2 and Table B for circuit diagram and connections for prepay TOUCH-TONE® dial coin collectors.

2.03 See Fig. 3 and Table C for circuit diagram and connections for postpay manual and rotary-dial coin collectors.

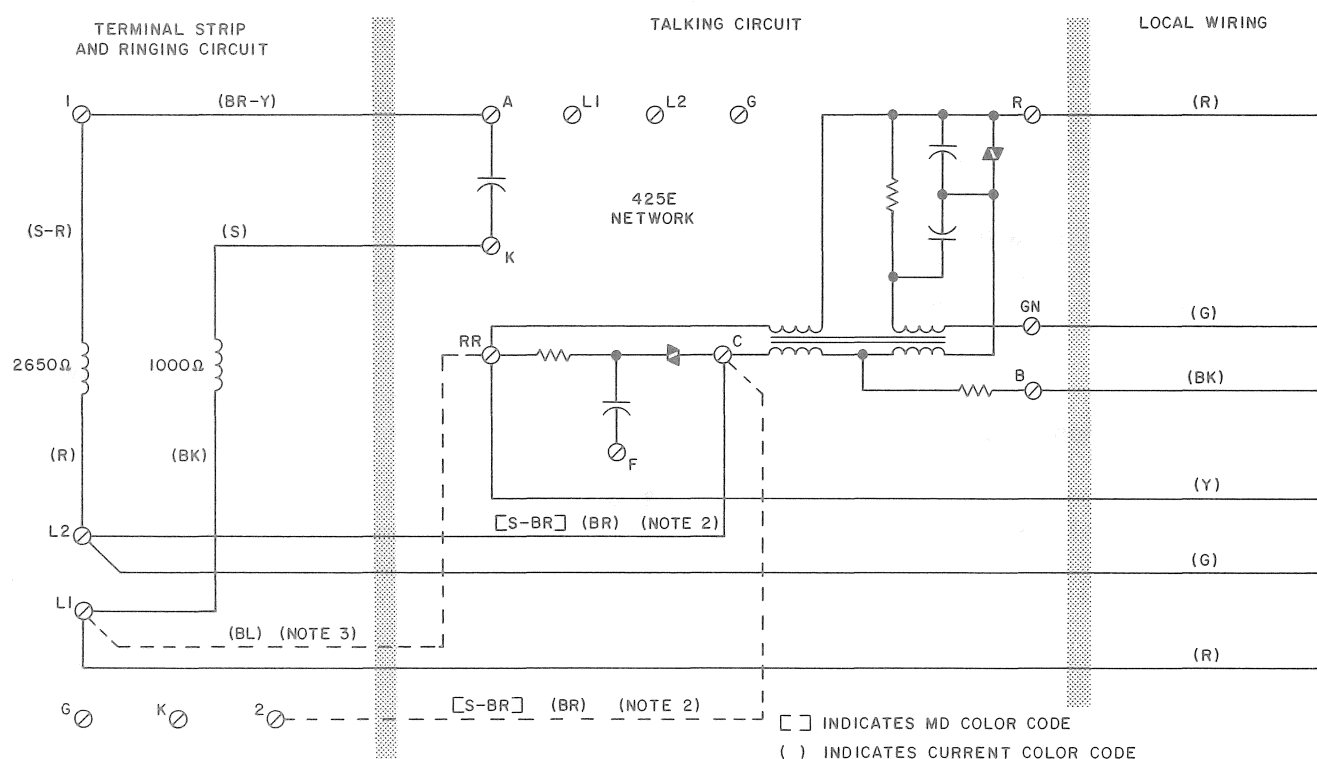


Fig. 1 — Circuit Diagram for Connections with Prepay Manual and Rotary Dial Coin Collectors

TABLE A

CONNECTIONS FOR PREPAY MANUAL  
AND ROTARY-DIAL COIN COLLECTORS

TYPE OF SERVICE		TERM. LOC.	SUBSCRIBER SET CONNECTIONS (WIRE OR LEAD)													
PREPAY MANUAL AND ROTARY — DIAL TYPE COIN COLLECTORS			RINGER LEAD (Note 1)				STRAPS — NETWORK TO TERMINAL STRIP				LOCAL WIRE FROM COIN COLLECTOR					
CURRENT CODES	MD CODES		S	BK	R	S-R	[S-BR] (BR)	BL	BR-Y	R	G	BK	Y	G	R	
191, 195, 196, 197 (CNT, DNT, GNT, HNT)	191, 195, 196, 197 (CN, DN, GN, HN, CNS, DNS, GNS, HNS)	Ntwk.	K	—	—	—	See Note 2	See Note 3	A	R	GN	B	RR	—	—	
220, 223 (CT, DT, GT, HT) 230G 233G 234G	220, 223 (C, D, G, H)  230, 233 (C, D, H)	Term. Strip	—	L1	L2	1			1	—	—	—	—	L2	L1	

Notes: 1. All connections are shown for bridged ringing, individual line installations. If other ringing arrangements are required, refer to section on connections for 685 subscriber sets used with hand telephone sets.

2. Disconnect the [S-BR] (BR) wire from 2 on terminal strip and connect it to L2. The other end of this wire is connected to C of the network.

3. Disconnect and remove the BL strap wire between RR of network and L1 of terminal strip.

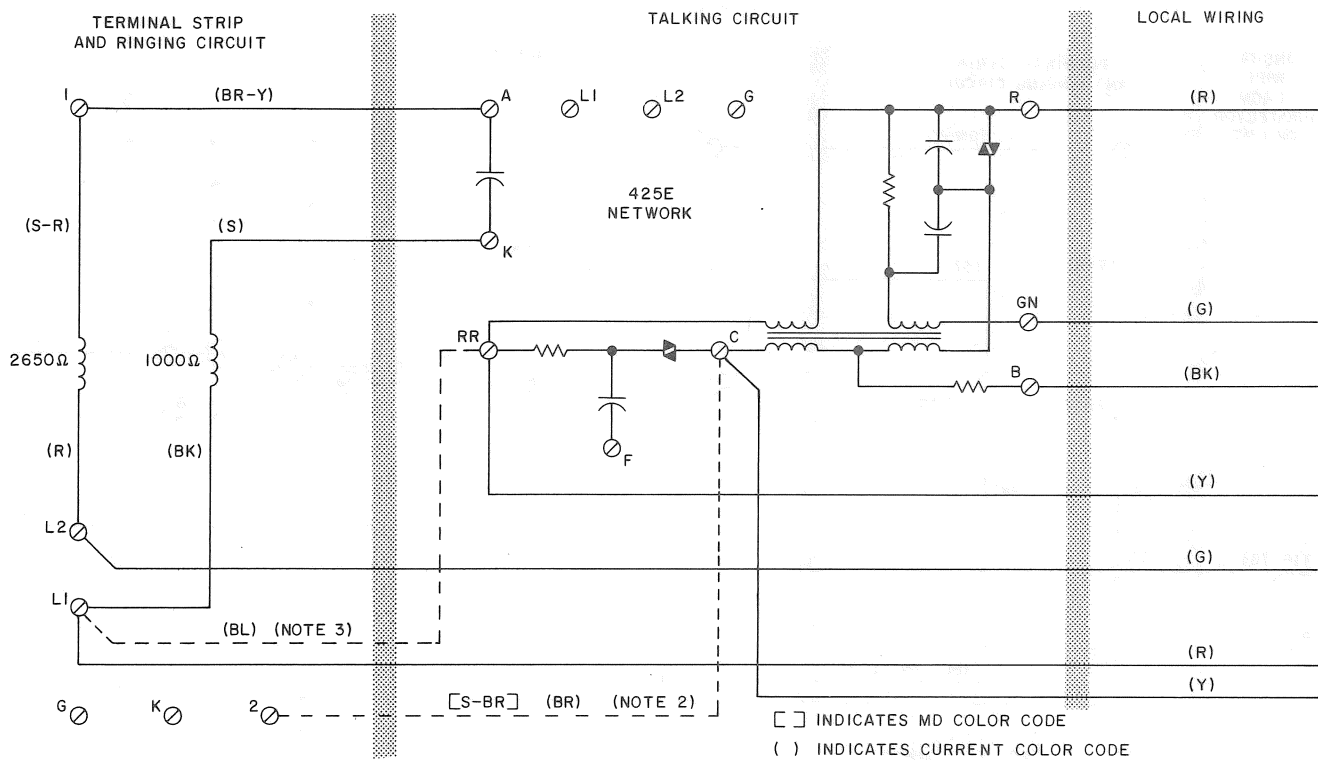


Fig. 2 — Circuit Diagram for Connections with Prepay TOUCH-TONE Dial Coin Collectors

TABLE B

CONNECTIONS FOR PREPAY  
TOUCH-TONE DIAL COIN COLLECTORS

TYPE OF SERVICE	TERM. LOC.	SUBSCRIBER SET CONNECTIONS (WIRE OR LEAD)													
		RINGER LEAD (Note 1)				STRAPS — NETWORK TO TERMINAL STRIP			LOCAL WIRE FROM COIN COLLECTOR						
		S	BK	R	S-R	[S-BR] (BR)	BL	BR-Y	R	G	BK	Y	G	R	Y
1234G	Ntwk.	K	—	—	—	See Note 2	See Note 3	A	R	GN	B	RR	—	—	C
	Term. Strip	—	L1	L2	1	—	—	1	—	—	—	—	L2	L1	—

Notes: 1. All connections are shown for bridged ringing, individual line installations. If other ringing arrangements are required, refer to section on connections for 685 subscriber sets used with hand telephone sets.

2. Disconnect and remove the [S-BR] (BR) strap wire between C of network and 2 of terminal strip.

3. Disconnect and remove the BL strap wire between RR of network and L1 of terminal strip.

4. Early models of the 1234G coin collector used a 685D subscriber set which is rated MD.

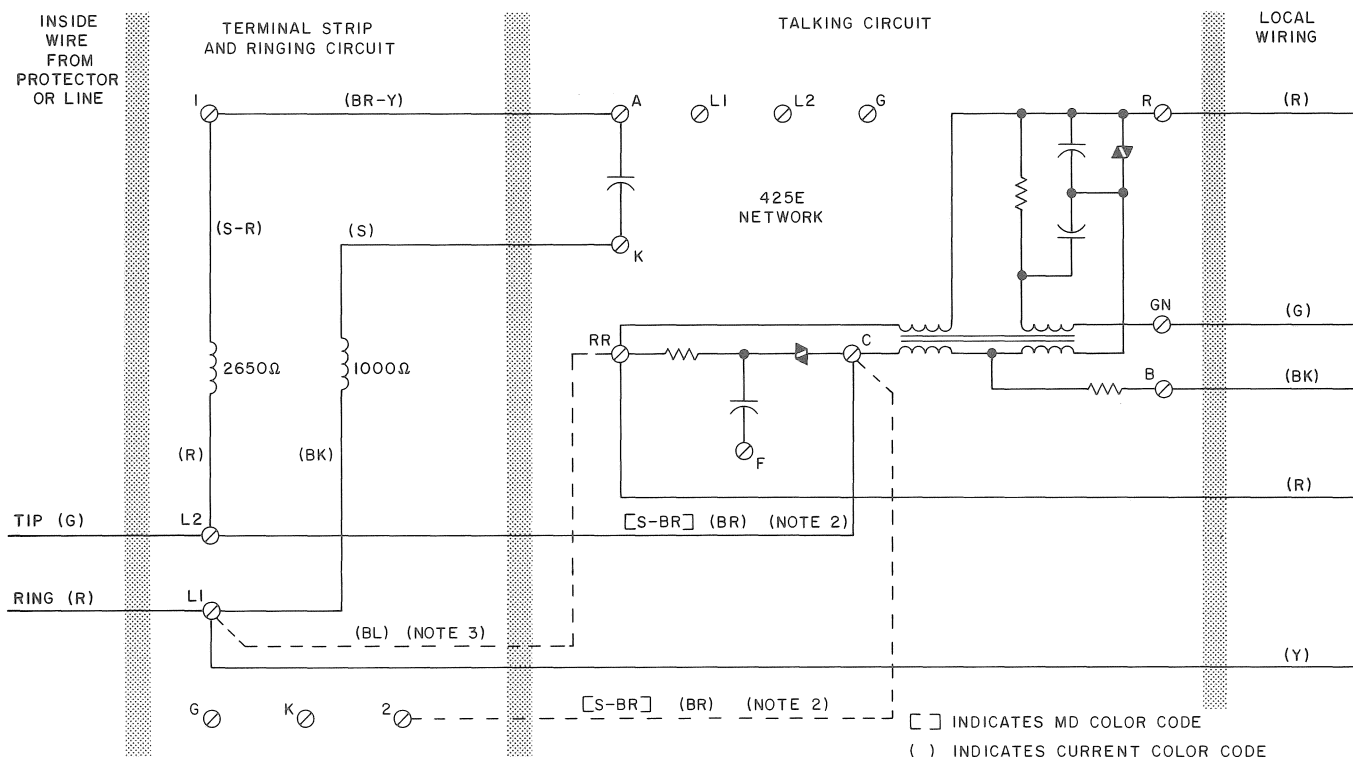


Fig. 3 — Circuit Diagram for Connections with Postpay Manual and Rotary Dial Coin Collectors

TABLE C

CONNECTIONS FOR POSTPAY MANUAL  
AND ROTARY-DIAL COIN COLLECTORS

TYPE OF SERVICE		TERM. LOC.	SUBSCRIBER SET CONNECTIONS (WIRE OR LEAD)															
POSTPAY MANUAL AND ROTARY-DIAL TYPE COIN COLLECTORS			INSIDE WIRE FROM LINE OR PROTECTOR			RINGER LEAD (Note 1)				STRAPS — NETWORK TO TERM. STRIP		LOCAL WIRE FROM COIN COLLECTOR						
CURRENT CODES	MD CODES		R	G	Y	S	BK	R	S-R	[S-BR] (BR)	BL	BR-Y	R	G	BK	Y	G	R
200C	182CN, DN 193GN, HN 198GN, HN	Ntwk.	—	—	—	K	—	—	—	See Note 2	See Note 3	A	R	GN	B	—	—	RR
210G	200D 210H	Term. Strip	L1	L2	—	—	L1	L2	1			1	—	—	—	L1	—	—
212G	212H		L1	L2	—	—	L1	L2	1			1	—	—	—	L1	—	—

Notes: 1. All connections are shown for bridged ringing, individual line installations. If other ringing arrangements are required, refer to section on connections for 685 subscriber sets used with hand telephone sets.

2. Disconnect the [S-BR] (BR) wire from 2 on terminal strip and connect it to L2. The other end of this wire is connected to C of the network.

3. Disconnect and remove the BL strap wire between RR of network and L1 of terminal strip.

# SUBSCRIBER SETS—685B

## USED WITH COIN COLLECTORS

### CONNECTIONS

TABLE A  
CONNECTIONS

Type of Service	Terminal Location	Subscriber Set Connections (Wire or Lead)																
Prepay Manual and Dial Type Coin Collectors		Ringer Lead				Straps Network to Terminal Block		S-36 Relay Lead				Local Wiring from Coin Collector						
		S	BK	R	S-R	S-BR	BR-Y	R	Y	BK *	S	G	R	BK	Y	G	R	Y
Handset Types: 191, 195, 196, 197 (CN, DN, GN, HN) (CNS, DNS, GNS, HNS) (CNT, DNT, GNT, HNT) 220, 223 (C, D, G, H) (CT, DT, GT, HT) 230, 233 (C, D, G, H)	Network	K	—	—	—	C	A	—	—	B	—	GN	R	B	RR	—	—	—
	Terminal Block	—	L1	L2	1	L2	1	L1	L2	—	K	—	—	—	—	L2	L1	K

\* Sets may have BK lead from the S36 relay connected to terminal 2 of terminal block. Move strap to terminal B of 425E network.

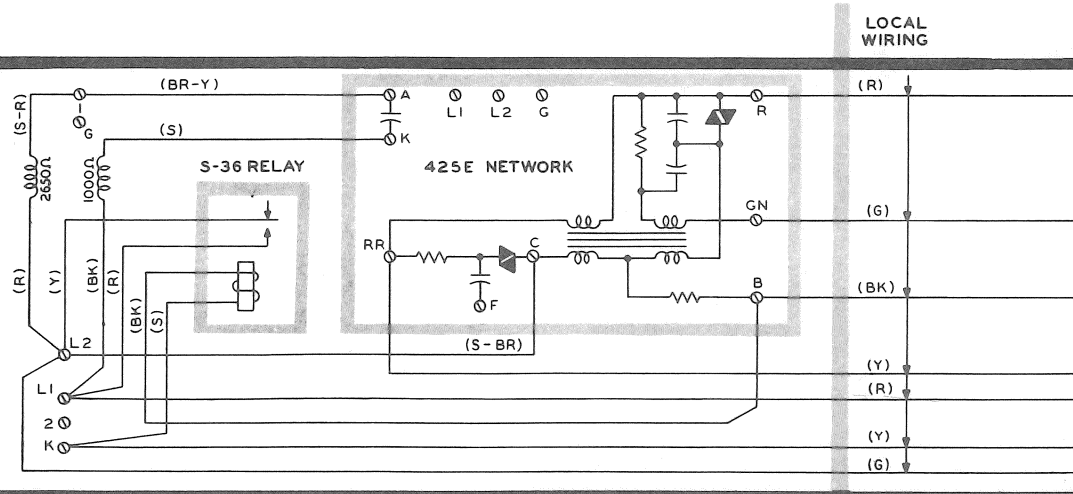


Fig. 1 - Circuit Diagram for Connection With Coin Collectors





**REFERENCE**  
**COIN COLLECTORS**  
**(SUBSCRIBER SET REQUIRED)**

**1. GENERAL**

**1.001** This addendum supplements Section 506-310-100, Issue 2.

**1.002** This addendum is issued to add information on:

- G3AJ handset
- KS-21468, List 1 tone pick-up coupler

**1. GENERAL**

The following change adds to Part 1 of this section.

(a) 1.06—added

**1.06** The G3AJ handset, presently used on these coin collectors is being replaced with a G3AJ-coded handset which has the following features:

- (1) It is equipped with an LB-type receiver unit and special field coil adapter in the handset which provides a uniform magnetic field of use to hard-of-hearing customers having inductive pick-up type hearing aids.
- (2) The G3AJ handset can be readily identified by a Bell System blue-colored grommet around the armored cord at the transmitter end of the handle.
- (3) Transmitter and receiver caps are bonded to the handle to discourage removal.

**6. MAINTENANCE**

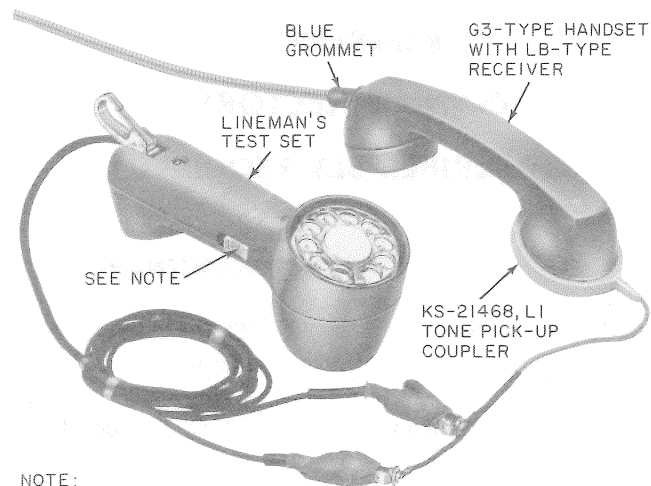
The following change adds to Part 6 of this section:

- (a) 6.53.1—added
- (b) Fig. 35.1—added

**Testing The LB Receiver**

**6.53.1** Test the G3AJ handset to determine if the field coil adapter in the handset is working correctly, as follows:

- (1) Place a KS-21468, List 1 tone pick-up coupler (Fig. 35.1) around the receiver cap of handset.
- (2) Clip a lineman's test set to the two tone coupler terminals.
- (3) Place the TALK-MONITOR switch in the TALK position.
- (4) Dial the 1000 Hz test number from the coin telephone set then listen in the test set receiver for the 1000 Hz tone.
- (5) If the tone is not present, the field coil adapter is defective and the coin phone handset should be replaced.



NOTE:  
PLACE "TALK-MONITOR"  
SWITCH IN TALK POSITION.

**Fig. 35.1—KS-21468, List 1 Tone Pick-up Coupler**

# REFERENCE

## COIN COLLECTORS

### (SUBSCRIBER SET REQUIRED)



**Fig. 1—Handset Type Coin Collector for Manual Service**

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Fig. 2—Handset Type Coin Collector for Rotary Dial Service

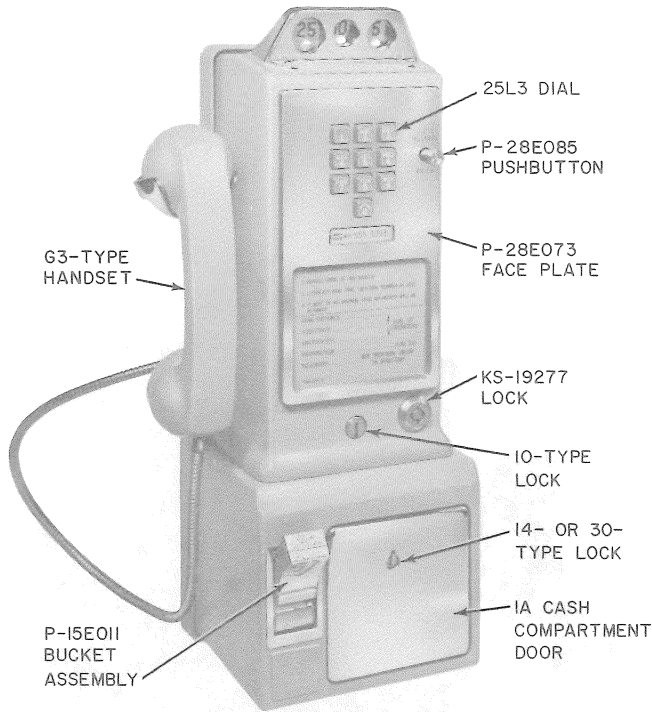


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## 1. GENERAL

1.01 This section is reissued to:

- Show G3R handset MD, replaced by G3AE handset
- Add 900054727 hex nuts for mounting 8-type card holder
- Include list of mounting locations for these coin collectors, 4.07 and 4.08
- Revise Fig. 14 and 24
- Add information on new coin trap spring

1.02 Coin collectors (Fig. 1, 2, and 3) except 235G, 236G, and 1235G, require a subscriber set to provide talking and ringing circuits.

1.03 The coin collector consists of a cast iron or aluminum backplate assembly (Fig. 4), a steel upper housing Fig. 5, and a steel lower housing (Fig. 6). Component parts are assembled on the backplate assembly and lower housing and either in or on the upper housing. Circuit connections between removable upper housing and backplate assembly are made with spur-type contacts on upper housing and contact springs on backplate assembly.

1.04 All multislot coin collectors have been MD.

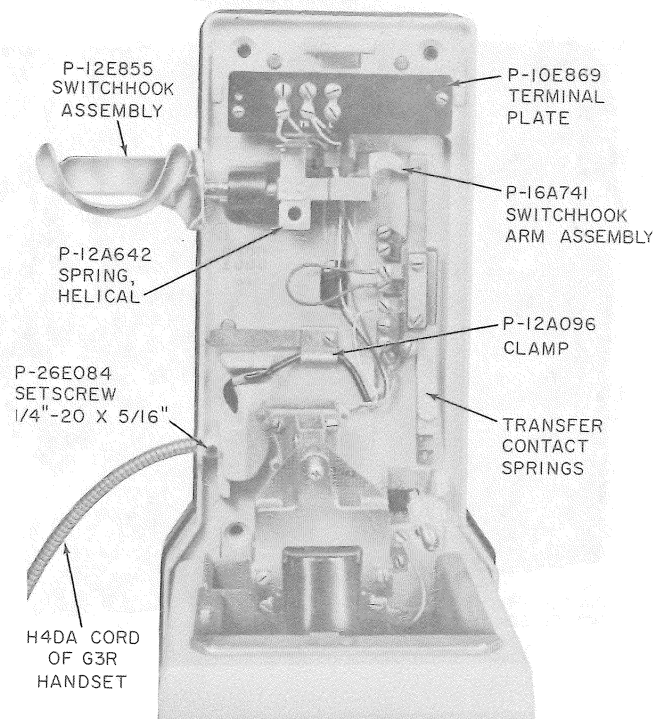


Fig. 4—Typical Backplate Assembly

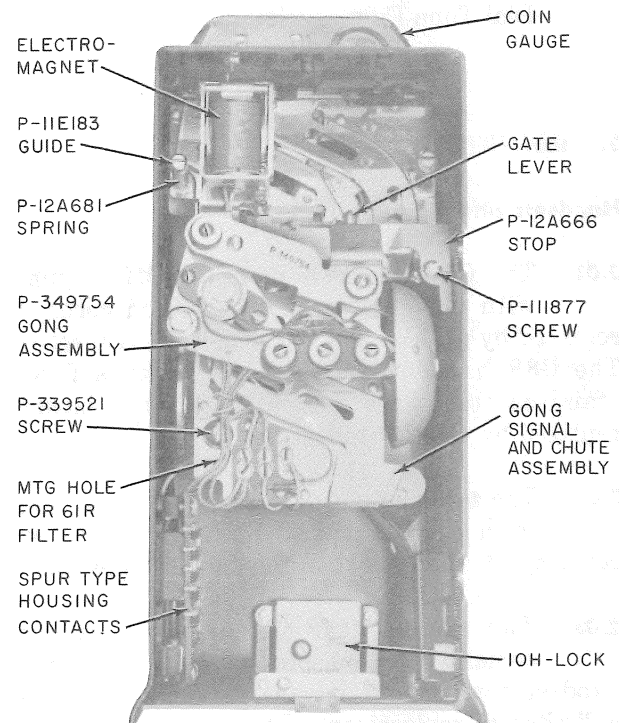


Fig. 5—Typical Upper Housing, Rear View





**Fig. 6—Typical Lower Housing, Less Coin Receptacle Door**

**1.05** This section does not include information on Dial Tone First service.

## 2. IDENTIFICATION

### Handsets and Cords

**2.01** The G1G and F1K handsets (MD) equipped with neoprene-jacketed armored cords, are replaced by ♦G3AE and F1L handsets, respectively. The G3R handset (MD) equipped with a flexible stainless steel hose over a black vinyl jacket is replaced by G3AE handset.♦

**2.02** The ♦G3AE♦ and F1L handsets are equipped with a PVC jacketed cord with an outer covering of stainless steel flexible armored cable.

**2.03** The transmitter and receiver caps are cemented to the handset handle. Since the handset components are sealed, field maintenance is limited to replacement of handset.

**2.04** The ♦G3AE♦ and F1L handsets are for use on all coin collectors to give additional handset protection against vandalism.

**2.05** The ♦G3AE♦ handset is available in color. The F1L handset is available in black only.

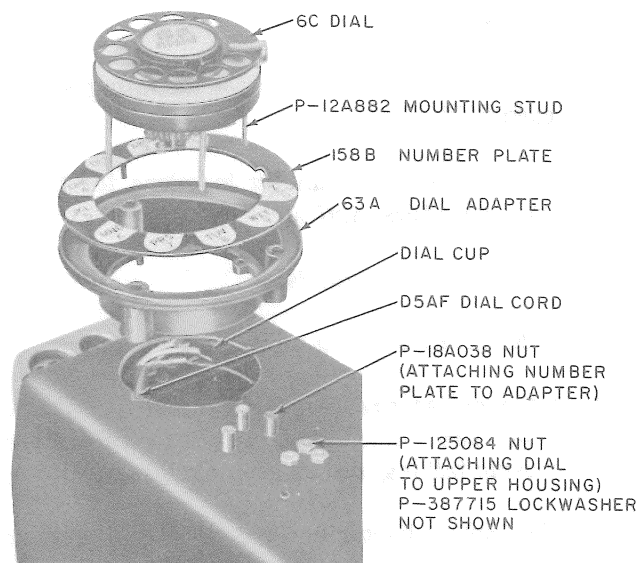
**2.06** All new coin collectors and all 200-type reissued coin collectors are equipped with the ♦G3AE♦ handset.

### Coin Gauge and Washer Reject Mechanism

**2.07** The coin gauge is riveted to the upper housing and is not replaceable in the field. When provided, the washer rejector and associated coin-release pushbutton mechanism are also riveted or permanently attached to the upper housing and are an integral part of the assembly.

### Dial and Adapter

**2.08** All reconditioned dial coin collectors are equipped with a 6-type rotary dial. The assembly of a 6-type dial is shown in Fig. 7. The apparatus and parts associated with a 5-type dial are not interchangeable with those used with a 6-type dial.



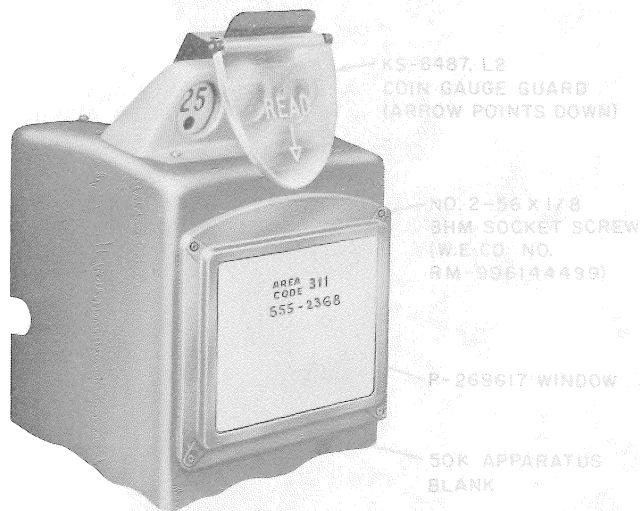
**Fig. 7—Assembly of 6-Type Dial**

**2.09** The 63A adapter incorporates a coin deflector feature to prevent dropped coins from lodging behind the dial.

**2.10** Replacement of dials and associated equipment is covered in Part 6 of this section.

### Apparatus Blank, Card Holder, and Coin Gauge Guard

- 2.11** The 50-type apparatus blank covers the dial cup on manual coin collectors (Fig. 8).



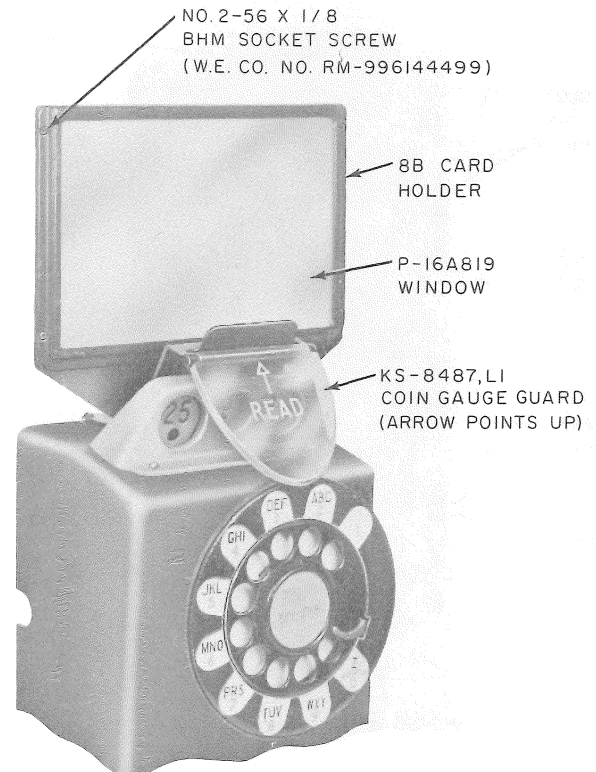
**Fig. 8—Manual Type Coin Collector Equipped With Coin Gauge Guard**

- 2.12** The chrome-plated 50K-44 apparatus blank replaces the 50L and 50K-3, -51, and -60 apparatus blanks.

- 2.13** The 8-type card holder mounts on top of the housing behind the coin gauge (Fig. 9). Three P-81J700 slotless machine screws, three #900054727 hex nuts, and three P-423631 lockwashers hold the card holder in place.

- 2.14** The 8B-44 card holder is chrome plated and replaces the 8C, 8B-3, -51, and -60 card holders and may be used on all coin collectors described in this section.

- 2.15** Postpay coin collectors without coin-release pushbutton mechanisms may be equipped with a KS-8487, List 1 coin gauge guard (Fig. 9) or a KS-8487, List 2 coin gauge guard (Fig. 8). Coin gauge guards are designed to alert the customer to read the instructions before depositing coins. The device consists of a mounting bracket and a transparent hinged guard with the word READ and a vertical red arrow. The guard must be raised before depositing coins.



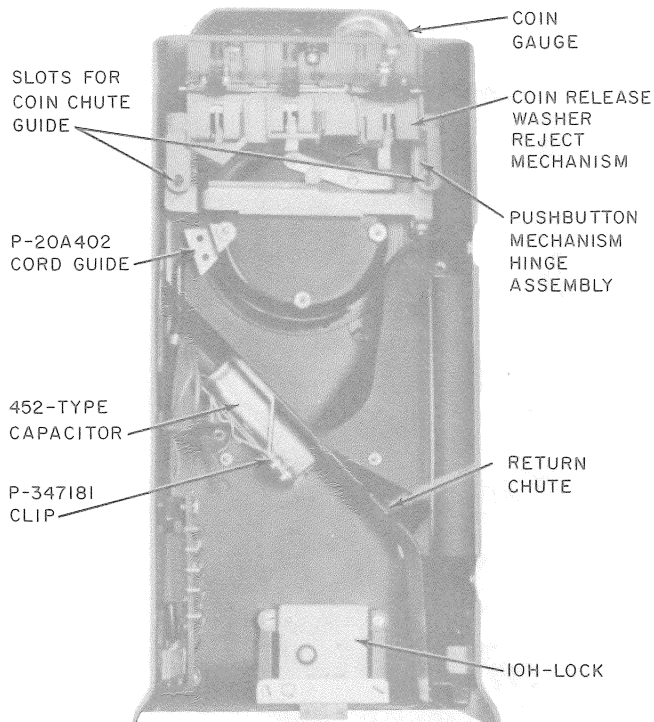
**Fig. 9—Dial Type Coin Collector Equipped with Coin Gauge Guard**

### Coin Chute Assembly

- 2.16** Coin chute assemblies or gong signal and chute assemblies are mounted inside the upper housing. Assemblies associated with the washer reject feature use two P-11E183 guides, two P-12A681 restoring springs, and one P-339521 screw (Fig. 5). Older coin collectors use two P-12A680 screws instead of guides. Coin chutes not associated with washer reject mechanisms are mounted with three P-339521 screws.

- 2.17** Coin collectors using gong signal and chute assemblies equipped with a P-349754 gong assembly have the 452-type capacitor associated with an electromagnet. It mounts on the upper housing underneath the coin return chute with a P-347181 clip (Fig. 10).

- 2.18** Coin chute assemblies without a P-349754 gong assembly are used on coin collectors with gongs mounted on the sides of the upper housing or on a swing type bracket.



**Fig. 10—Upper Housing, Coin Chute Assembly Removed**

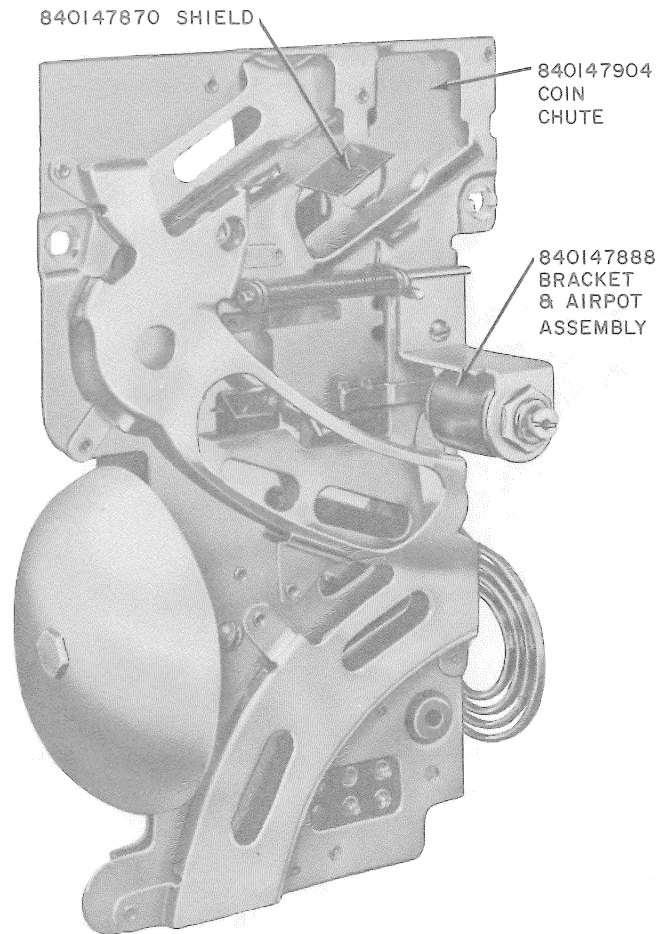
**2.19** A 61R radio-frequency suppression filter is not considered a part of the chute assembly. The filter, when used, mounts on the rear of the coin chute at the lower left corner. A mounting hole (Fig. 5) is provided. Dial postpay coin collectors are normally equipped with 61R filters and are identified by a red dot located on the back of the coin gauge.

**2.20** An 840148175 gong signal and chute assembly (Fig. 11) is available to provide increased fraud resistance. It is compatible with all 196-, 197-, and 200-type multislot coin collectors except the 1234G TOUCH-TONE® coin collector.

#### Cash Compartment

**2.21** The self-locking coin receptacle and 1A cash compartment door, equipped with lock for the cash compartment, are controlled according to arrangements with the Commercial Department.

**2.22** The self-locking receptacle consists of a 1B coin receptacle equipped with a 1C, 1D, or 1E coin receptacle cover. Use of the coin receptacle



**Fig. 11—840148175 Fraud-Resistant Gong Signal and Chute Assembly**

requires a 1A or 1B coin receptacle rail on the mechanism base in the cash compartment (Fig. 6).

**2.23** The P-12E598 coin receptacle booster spring (Fig. 6) reduces the clearance between the coin receptacle cover and the rail. This prevents collected coins from falling out of their normal path on to the coin receptacle cover.

#### Return Chute

**2.24** The lower part of the coin return chute is located in the lower housing to the left of the cash compartment (Fig. 6).

**2.25** When a pull bucket is provided, it acts as a receptacle for returned coins.

**2.26** The pull bucket, in both closed and open positions, prevents access to the return chute.

**2.27** Later models of coin collectors have P-15E011 chrome-plated pull bucket assemblies.

**2.28** For additional information on pull bucket assemblies, refer to Part 6 of this section.

#### Backplate Assembly

**2.29** Parts mounted on the backplate are illustrated in Fig. 4.

**2.30** All 200 series coin collectors have cast aluminum backplates. Lower numbered codes have cast iron backplates.

**2.31** The 1A backplate is used on coin collectors arranged for security studs, bolt fasteners, and stud fasteners at locations where additional mounting security is needed.

**Note:** Coin collectors equipped with a 1A backplate cannot be used on 139A backboards and 19-type shelves.

**2.32** The 234G and 1234G coin collectors are furnished with a 1A backplate and are *always* installed with security studs, bolts, or stud fasteners, and a KS-19277 lock assembly. See Part 6 of this section for additional information on the KS-19277 lock assembly.

#### Switchhook Assembly

**2.33** Later models of coin collectors have 2-piece, chrome-plates P-12E855 switchhook assemblies (Fig. 12).

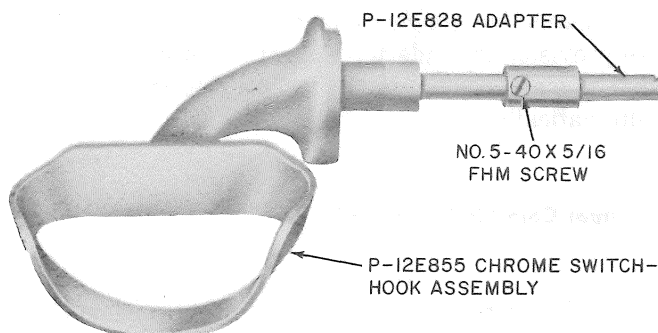


Fig 12—Two-Piece Switchhook Assembly

**2.34** Coin collectors converted from transmitter-receiver type to handset type use P-10C139 switchhook assemblies which require a P-10C136 auxiliary spring.

#### Mechanism Unit Assembly

**2.35** The mechanism unit assembly mounts on top of the lower housing assembly. Four types shown are:

- Manual postpay, no coin relay (Fig. 13)
- Dial postpay, no coin relay (Fig. 14)
- Manual or dial coin first 2-coil coin relay (Fig. 15)
- Manual or dial coin first single-coil coin relay (Fig. 16).

#### Coin Relays

**2.36** Most 230-, 233-, and 234-type coin collectors are equipped with a P-13E961 coin relay (Fig. 16) which replaces the P-10E786 coin relay now rated MD. The relays are interchangeable, but most of the components are not.

**2.37** The single coil relay has a P-10E783 cover.

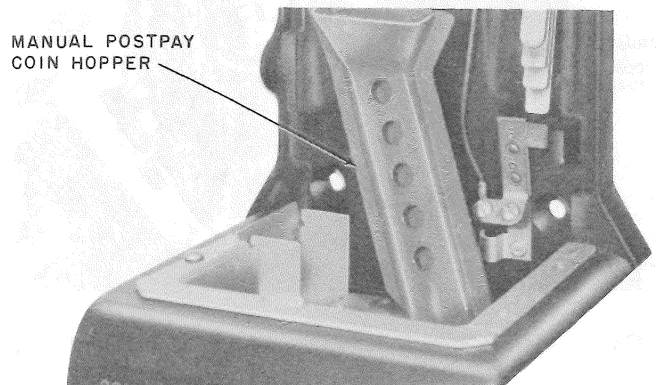


Fig. 13—200C Manual Postpay Mechanism Unit

#### Hopper Assemblies

**2.38** The hopper is assembled to the coin relay in prepay coin collectors. Refer to Part 6 of this section for additional information on coin hoppers in both postpay and coin first service.

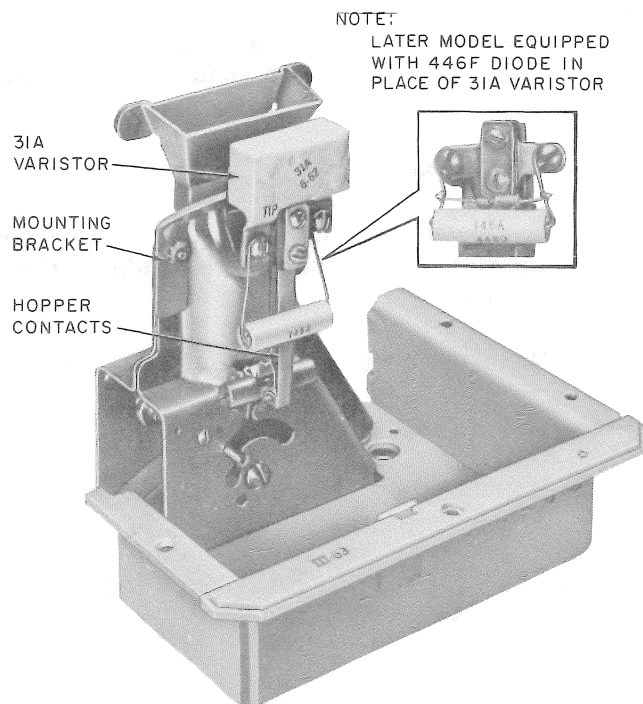


Fig. 14—212G Dial Postpay (CDO) Mechanism Unit

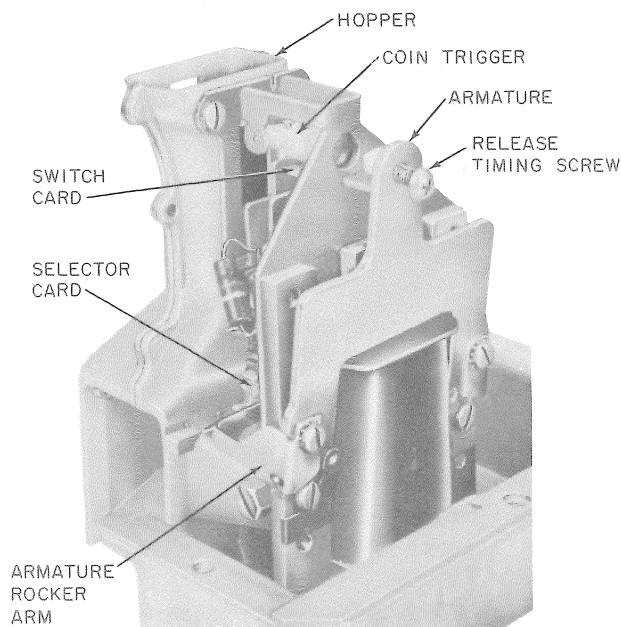


Fig. 16—P-10E683 Mechanism Unit With P-13E961 Coin Relay

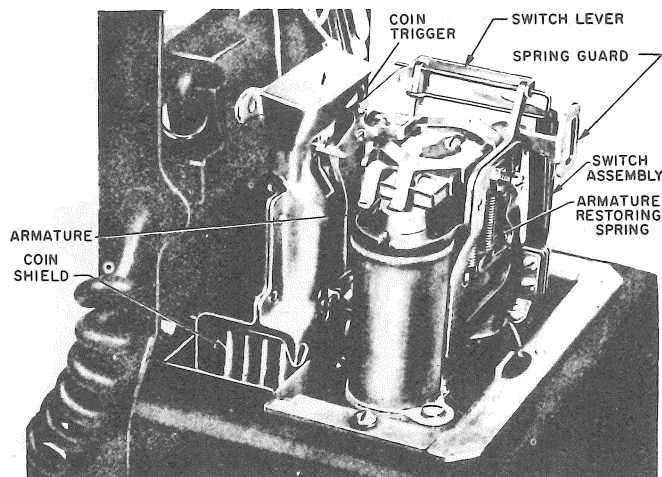


Fig. 15—Coin First Mechanism Unit, 2-Coil Coin Relay

### 3. SELECTION

#### CATEGORIES

##### Manual Postpay

**3.01** The 200C-3 is the only current model of manual postpay coin collector available.

**3.02** Refer to Table A for apparatus furnished with coin collector.

**3.03** Refer to Table B for apparatus available but not furnished.

**3.04** Refer to Table C for features of the coin collector.

**3.05** In a manual postpay coin collector, coins are deposited at the request of the operator and fall directly into the cash box. Coins deposited give distinctive gong signals audible to the operator. No provision is made for the return of coins except that those deposited in the wrong slot are returned automatically.

##### Manual Coin First (Prepay)

**3.06** Refer to Table D for coin collectors available and apparatus furnished with coin collectors.



- 3.07** Refer to Table B for apparatus available but not furnished.
- 3.08** Refer to Table E for features of the coin collector.
- 3.09** Manual coin first coin collectors are designed for 10-cent operation but may be converted to 5-cent operation by means of a P-339098 cutover clip.

#### **Dial Postpay**

- 3.10** The 212G-3 is the only dial postpay coin collector available.
- 3.11** Refer to Table F for apparatus furnished with this coin collector.
- 3.12** Refer to Table B for apparatus available but not furnished.
- 3.13** Refer to Table G for features of the coin collector.
- 3.14** The station or operator can be dialed without depositing a coin. Coin deposits give distinctive gong signals audible to the operator.
- 3.15** Coins deposited cannot be refunded; coins deposited in wrong slots are returned automatically. A nickel deposited while handset is on-hook will also be returned.
- 3.16** Dial postpay coin collectors are designed for 10-cent operation but may be converted to 5-cent operation by means of a P-339098 cutover clip.

#### **Dial Coin First (Prepay)**

- 3.17** Refer to Table H for coin collectors available and apparatus furnished with coin collectors.
- 3.18** Refer to Table B for apparatus available but not furnished.
- 3.19** Refer to Table I for features of the coin collector.
- 3.20** Dial coin first coin collectors are designed for 10-cent operation but may be converted to 5-cent operation by means of a P-339098 cutover clip.

#### **CODES**

- 3.21** Code numbers signify types of coin collectors as follows:

**Note:** No definite plan or arrangement can be applied to lower numbered codes or the relationship between old and converted code numbers; however, third digit characters in the 190 series coin collector code numbers have the following significance:

#### ***Third Digit—Service and Special Features***

- 1—Coin first
- 2—Manual postpay
- 3—Dial postpay (CDO)
- 5—Coin first equipped with pull bucket
- 6—Coin first equipped with washer reject
- 7—Coin first equipped with pull bucket and washer reject
- 8—Dial postpay equipped with washer reject (CDO)

- 3.22** The characters in the 200 series coin collector code numbers have the following significance:

#### ***First Digit—Telephone Circuit***

- 2—425B network type telephone circuit

#### ***Second Digit—Features***

- 0—Manual postpay, 5-cent coin chute
- 1—10-cent dial postpay (CDO)
- 2—10-cent coin first, 4-spring dial shorting coin relay
- 3—10-cent coin first, slow-release single-coil dial shorting coin relay. Coin collector has corrosion-resistant finish.

#### ***Third Digit—Features***

- 0—Basic collector

2—Washer reject

3—Pull bucket and washer reject

4—Pull bucket, washer reject, and added security features.

**3.23** The characters of the 1234G (TOUCH-TONE®) coin collector have the following significance:

1—10-button TOUCH-TONE dial

2—425B network type telephone circuit

3—10-cent coin first, slow-release single-coil dial shorting coin relay. Coin collector has corrosion-resistant finish.

4—Pull bucket, washer reject, and added security features

**3.24** Code letters signify types of service, coins, and features as follows:

***First Letter—Service and Coin Features***

C—Manual, U.S. coins

D—Manual, U.S. and Canadian coins

\*E—Dial, U.S. coins (A-type number plate)

\*F—Dial, U.S. and Canadian coins (A-type number plate)

G—Dial, U.S. Coins (B-type number plate)

H—Dial, U.S. and Canadian coins (B-type number plate)

\*L—Local battery talking, common battery signaling (obsolete)

\*These coin collectors are obsolete.

***Second, or Second and Third Letters—Features Added by Conversion***

N—Uses a network

R—Spring cord (stamped on carton only)

S—4-spring dial shorting coin relay

T—Slow-release, single-coil dial shorting coin relay.

**COLOR**

**3.25** Multislot coin collectors are available in black (-3), moss green (-51), and light beige (-60).

**3.26** The last two digits in a part number signify the color of the apparatus.

**4. INSTALLATION**

**LOCATION**

**Note:** The location of a coin collector should be specified by the service order or an accompanying work sheet. If a location is not specified, obtain instructions from the customer before proceeding.

**4.01** Consider the following:

- Visibility, accessibility, and possible accident hazards in selecting locations.

**4.02** Avoid locations over or adjacent to counters, showcases, or other property which could be accidentally damaged by falling handsets.

**Mounting Surfaces**

**4.03** Consult a supervisor before locating coin stations on finishes that would be expensive to repair if the set is removed.

**4.04** Have customer or building owner drill mounting and wire entrance holes through glazed tile, marble, or similar surfaces.

**Inductive Effects**

**4.05** Locate set and associated wiring at least 6 inches from neon fixtures, transformers, or other interference-causing equipment. Refer to Division 500, section entitled: Inductive Noise, for complete information on inductive noise effects of coin collectors.

**Security of Coin Station**

**4.06** Avoid locations where:

- Coin station can be dislodged by hard use.

◆ TABLE A ◆

**MANUAL POSTPAY COIN COLLECTOR  
APPARATUS FURNISHED**

COIN COLLECTOR	HANDSET	UPPER HOUSING ASSEMBLY	LOWER HOUSING ASSEMBLY	BACKPLATE ASSEMBLY	GONG SIGNAL AND CHUTE ASSEMBLY	COIN CHUTE ONLY
200C-3	G3AE	P-81B803	P-81A603	P-81A103	P-338889	P-338883

TABLE A (Cont)

COIN COLLECTOR	SUBSCRIBER SET	APPARATUS BLANK	SWITCH HOOK ASSEMBLY	COIN HOPPER AND BASE ASSEMBLY	COIN RECEPTACLE RAIL	UPPER HOUSING LOCK
200C-3	685A	50K-44	P-12E855	P-10E219	1B	10-Type

- Fasteners cannot be placed in solid backing.

- Coin station can be pried loose (on round columns, door or window facings, uneven surfaces, etc.).

**4.07** ◆ All coin collectors except 235- and 1235-type can be mounted in/on the following:

- 178A-3 backboard
- 10- and 11-type booths
- KS-14611 outdoor booth
- KS-16797 universal booth
- KS-19206 curved door booth
- KS-19267 coin telephone shelf
- KS-19340 wood booth

- KS-19425 indoor-outdoor booth
- KS-19426 walk-up, drive-up mounting
- KS-19580 outdoor booth
- KS-19945 shelf
- KS-20194 wedge shelf
- KS-20255 telephone kiosk.
- KS-20842 mounting

**4.08** The 235- and 1235-type coin collectors can be mounted in/on the following:

- KS-19206 curved door booth
- KS-19340 wood booth
- KS-19426 walk-up, drive-up mounting



**TABLE B**  
**ALL COIN COLLECTORS**  
**APPARATUS AVAILABLE BUT NOT FURNISHED**

COIN COLLECTOR	COIN COLLECTOR DOOR	COIN RECEPTACLE	COIN RECEPTACLE COVER	CASH COMPARTMENT ALARM SWITCH	CASH COMPARTMENT LOCK	UPPER HOUSING ALARM SWITCH
All Manual Postpay	1A-44	1B	1D or 1E	P-372083 or 257A	14-Type or 30-Type	227A
All Dial Postpay						
All Manual Coin First						
All Dial Coin First						

**TABLE B (Cont)**

COIN COLLECTOR	CARD-HOLDER	APPARATUS BLANK	SUPPRESSION FILTER
All Manual Postpay	8B-44	Furnished (See Table A)	Not Required
All Dial Postpay			61R (Usually Furnished)
All Manual Coin First		50K-44	Not Required
All Dial Coin First			61R

**TABLE C**  
**MANUAL POSTPAY COIN COLLECTOR FEATURES**

COIN COLLECTOR	COMB SWHK AND TRFR ASSEMBLY	TWO 654 TRANSMITTERS
200C-3	•	•

\* 1234G does not require on apparatus blank. It is equipped with a P-28E073 faceplate.

◆ TABLE D ◆

**MANUAL COIN FIRST COIN COLLECTORS  
APPARATUS FURNISHED**

COIN COLLECTOR	HANDSET	UPPER HOUSING ASSEMBLY	LOWER HOUSING ASSEMBLY	BACKPLATE ASSEMBLY	GONG SIGNAL AND CHUTE ASSEMBLY
174CT	F2	BA-220497C	Information Not Available	Information Not Available	P-339528
176CT					
191CT	F1L	BA-220499C			P-340222
191DT		BA-20499D			P-340223
191CNT	G3AE	P-81C003			P-340222
191DNT		P-81C103			P-340223
195CT	F1L	BA-220449C			P-340222
195DT		BA-220449D			P-340223
195CNT	G3AE	P-81C003			P-340222
195DNT		P-81C103			P-340223
196CT	F1L	BA-220501C			P-20A125*
196DT		BA-220501D			P-20A126*
196CNT	G3AE	P-81B203			P-20A125*
196DNT		P-81B303			P-20A126*
197CT	F1L	BA-220501C			P-20A125*
197DT		BA-220501D			P-20A126*
197CNT		P-81B203			P-20A125*
197DNT		P-81B303			P-20A126*
220CT	G3AE	P-81C003	P-81A703	P-81A303	P-340222
220DT		P-81C103			P-340223
223CT		P-81B203	P-81B003		P-20A125*
223DT		P-81B303			P-20A126*

\* An 840148175 gong signal and chute assembly is available to provide increased fraud resistance.

◆ TABLE D (Cont) ◆

COIN COLLECTOR	COIN CHUTE ONLY	SUBSCRIBER SET	SWITCH HOOK ASSEMBLY	COIN RELAY AND HOPPER ASSEMBLY	COIN RECEPTACLE RAIL	UPPER HOUSING LOCK
174CT	P-339526	634 or 684 Type	Information Not Available	P-11E964	1B	10-Type
176CT						
191CT		687A				
191DT	P-339527					
191CNT	P-339526	685A or 685B				
191DNT	P-339527					
195CT	P-339526	687A				
195DT	P-339527					
195CNT	P-339526	685A or 685B				
195DNT	P-339527					
196CT	P-20A119 †	687A				
196DT	P-20A120 †					
196CNT	P-20A119 †	685A or 685B				
196DNT	P-20A120 †					
197CT	P-20A119 †	687A				
197DT	P-20A120 †					
197CNT	P-20A119 †	685A or 685B				
197DNT	P-20A120 †					
220CT	P-339526					
220DT	P-339527					
223CT	P-20A119 †					
223DT	P-20A120 †					
			P-12E855	10-Type Plus KS-19277		

†An 840147904 fraud-resistant coin chute is used with an 840148175 gong signal and chute assembly.

**TABLE E**  
**MANUAL COIN FIRST COIN COLLECTORS**  
**FEATURES**

COIN COLLECTOR	COMB SWHK AND TRFR ASSEMBLY	WOOD TERM STRIP	452A OR 452 B CAPACITOR	452B CAPACITOR	IND COIL AND CAPACITOR	TWO 654 TRANSMITTERS	PULL BUCKET	WASHER REJECT					
174CT		●	●										
176CT													
191CT	●				●								
191DT													
191CNT													
191DNT													
195CT					●		●						
195DT													
195CNT													
195DNT													
196CT					●			●	●	●			
196DT					●								
196CNT													
196DNT													
197CT					●		●	●	●	●	●	●	
197DT													
197CNT													
197DNT													
220CT													
220DT													
223CT								●	●	●	●		
223DT													

**TABLE F**  
**DIAL POSTPAY COIN COLLECTOR**  
**APPARATUS FURNISHED**

COIN COLLECTOR	HANDSET	DIAL	DIAL ADAPTER	NUMBER PLATE	UPPER HOUSING ASSEMBLY
212G-3	G3AE	6C	63A	158B	P-81B603

**TABLE F (Cont)**

COIN COLLECTOR	LOWER HOUSING ASSEMBLY	BACKPLATE ASSEMBLY	SUBSCRIBER SET	COIN RECEPTACLE	UPPER HOUSING LOCK
212G-3	P-81A803	P-81A203	685A	1B	10 Type or 27 Type

**TABLE G**  
**DIAL POSTPAY COIN COLLECTOR FEATURES**

COIN COLLECTOR	COMB SWHK AND TRFR ASSEMBLY	WASHER REJECT
210G-3	•	•
212G-3		

- KS-19442 deluxe glass booth
- KS-20194 wedge shelf
- A wall that will allow the phone to be recessed.
- KS-20630 booth

#### WIRING

**4.09** Select and place wire in accordance with section covering wiring. Wire coin station with triple station wire to provide an individual ground conductor for each station.

**Note:** The ground connector must be the same as for signaling ground.

**4.10** Conceal wiring near coin station. If this is not practical, use approved molding or woven conduit to conceal wiring.

**4.11** Locate connecting block, protector or other terminating apparatus where they will be inaccessible to the public. If necessary, locate protector outside building.

**4.12** Location requirements for associated subscriber sets are specified in the appropriate booth sections.

#### BACKBOARDS

**4.13** Refer to Division 506, section entitled; Coin Telephone Stations, Backboards, for complete installation procedures.



**Mount all coin stations on an approved backboard.**

**4.14** Backboard and coin station must be securely mounted with the required fasteners, mounting screws, security studs, and associated fasteners.

**Note:** If the coin station is wall mounted (not in a booth) the mounting surface must be plane to avoid warping the backplate and causing misalignment between upper and lower housing.

◆ TABLE H ◆

## DIAL COIN FIRST COIN COLLECTORS APPARATUS FURNISHED

COIN COLLECTOR	HANDSET	DIAL		DIAL ADAPTER	NUMBER PLATE	UPPER HOUSING ASSEMBLY		
		TRANS ZONE 2	TRANS ZONE 5					
174GT	F2	5 Type or 6 Type		Information Not Available	147B-3	BA-220497G		
176GT					158B-3	BA-220499G		
191GT	F1L					BA-220499H		
191HT						P-81C203		
191GNT	G3AE	6 Type	6 Type			P-81C303		
191HNT		6 Type	BA-220499C					
195GT	F1L	5 Type or 6 Type	6 Type			BA-220499H		
195HT						P-81C203		
195GNT	G3AE					6 Type	P-81C303	
195HNT							BA-220501G	
196GT	F1L						BA-220501H	
196HT							P-81B403	
196GNT	G3AE					6 Type	6 Type	P-81B503
196HNT								BA-220501G
197GT	F1L	5 Type or 6 Type				BA-220501H		
197HT						P-81B403		
197GNT	G3AE	6 Type	6 Type			BA-220501H		
197HNT						P-81C203		
220GT	G1BR-3	5 Type or 6 Type		63A-3		P-81C303		
220HT				63A*		158B*	P-81B400*	
223GT	G1BR*	6 Type		63A-3	158B-3	P-81B500*		
223HT						P-81C203		
230G-3	G3AE	5 Type or 6 Type				P-81B403		
233G-3		6 Type				P-81R203		
234G-3								
1234G*	G3AE*	25L3		25L3	—	—	P-840200*	

\* Color designated by last two digits; 03-black, 51-moss green, 60-light beige.

◆ TABLE H (Cont) ◆

COIN COLLECTOR	GONG SIGNAL AND CHUTE ASSEMBLY	COIN CHUTE ONLY	SUBSCRIBER SET	COIN RELAY AND HOPPER ASSEMBLY	COIN RECEPTACLE RAIL	UPPER HOUSING LOCK
174GT 176GT	P-339528	P-339526	634 Type or 684 Type	P-11E964	1B	10-Type
191GT	P-230222		687A			
191HT	P-340223	P-339527				
191GNT	P-220222	P-339526	685A or 685B			
191HNT	P-220223	P-339527				
195GT	P-340222	P-339526	687A			
195HT	P-340223	P-339527				
195GNT	P-340222	P-339526	685A or 685B			
195HNT	P-340223	P-339527				
196GT	P-20A125 †	P-20A119 †	687A			
196HT	P-20A126 †	P-20A120 †				
196GNT	P-20A125 †	P-20A119 †	685A or 685B			
196HNT	P-20A126 †	P-20A120 †				
197GT	P-20A125 †	P-20A119 †	687A			
197HT	P-20A126 †	P-20A120 †				
197GNT	P-20A125 †	P-20A119 †				
197HNT	P-20A126 †	P-20A120 †				
220GT	P-340222	P-339526	685A or 685B			10-Type Plus KS-19277
220HT	P-340223	P-339527				10-Type
223GT	P-20A125 †	P-20A119 †				10-Type Plus KS-19277
223HT	P-20A126 †	P-20A120 †				
230G-3	P-340222	P-339526				
233G-3 234G-3	P-20A125 †	P-20A119 †				
1234G*	P-20A125	P-20A119	685A			

\*Color designated by last two digits; 03-black, 51-moss green, 60-light beige.

†An 840148175 fraud-resistant gong signal and chute assembly is available for use in lieu of the P-20A125 and P-20A126 except in the 1234G TOUCH-TONE coin collector. If this assembly is used, the coin chute part number is 840147904.

**TABLE I**  
**DIAL COIN FIRST COIN COLLECTORS**  
**FEATURES**

COIN COLLECTOR	COMB SWHK AND TRFR ASSEMBLY	WOOD TERM STRIP	452 A OR 452 B CAPACITOR	452 B CAPACITOR	IND COIL AND CAPACITOR	TWO 654 TRANSMITTERS	PULL BUCKET	WASHER REJECT
174GT		•	•					
176GT								
191GT					•			
191HT								
191GNT								
191HNT								
195GT					•		•	
195HT								
195GNT								
195HNT								
196GT	•			•	•	•		
196HT								
196GNT								
196HNT								
197GT					•		•	
197HT								
197GNT								
197HNT								
220GT								
220HT								
223GT							•	•
223HT								
230G-3								
233G							•	•
1234G								

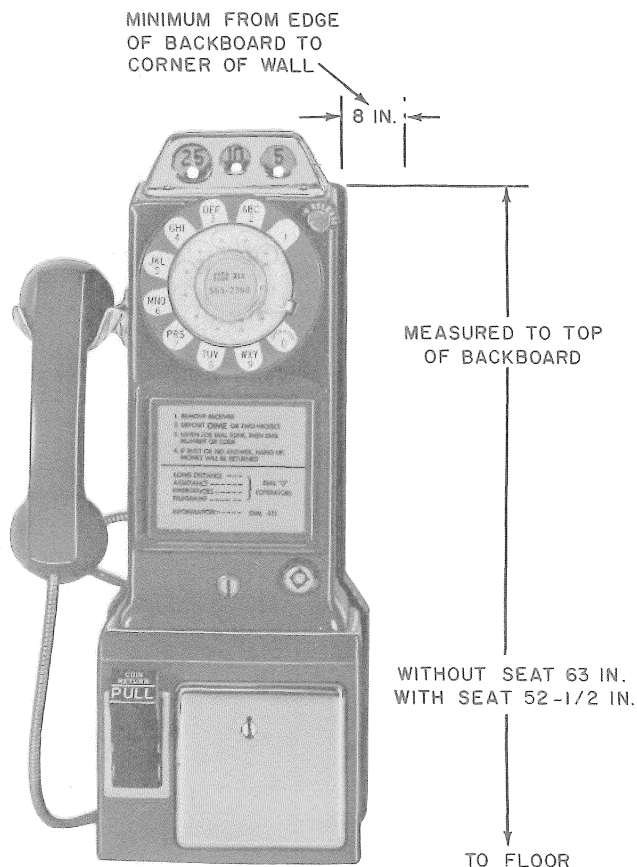


## MOUNTING



**Remove handset from switchhook before removing or replacing upper housing to avoid damage to the gate operating arm. Do not reassemble upper housing on coin first coin collectors without placing a P-10E783 cover over the coin relay.**

**4.15** Fig. 17 shows the suggested mounting height and clearance for all coin stations. Stations may be mounted at other heights to meet local conditions providing this does not create service or maintenance problems.



**Fig. 17—Suggested Mounting Height and Clearance**

**4.16** To mount coin station:

- (1) Place required number of screw fasteners in upper and lower mounting holes.

**Note:** If coin compartment is not open, the lower fasteners will be added later by the public telephone representative.

- (2) Bring wires through opening in backplate.
- (3) Avoid bowing backplate by partially tightening each screw fastener alternately.

**4.17** Ground housing assembly, as follows:

(a) **Coin first open type installation:**

- Connect JKT lead or GS insulated wire as shown in Fig. 18.
- Dress wire so that it will not interfere with moving parts of coin mechanism or coin relay shield.

(b) **Indoor wooden booths:**

- A 14-gauge insulated ground wire (P-12C414 ground wire assembly) is provided. (Fig. 19)
- Connect ground wire from outside grounded BX armored power cable to ventilator or blower and to housing ground screw on coin station.

(c) **Metal booths:**

- Grounding is provided through mounting screws.

(d) **19- and 20-type shelves:**

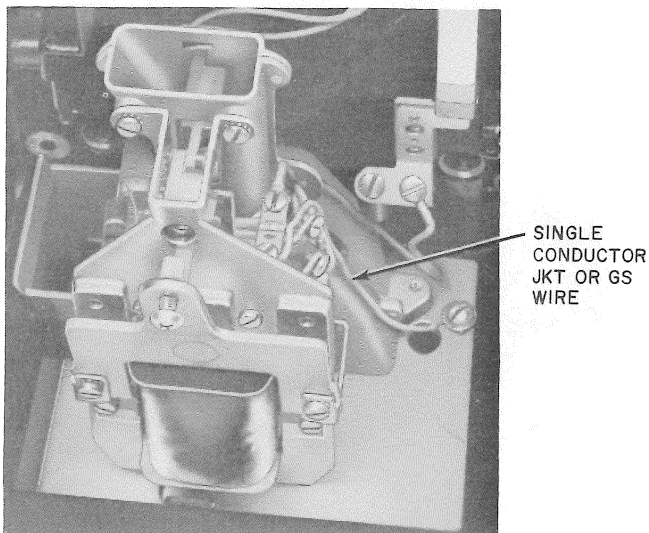
- See (a)

**4.18** To ground upper housing to backplate: Place U-shaped spring clip on left edge of upper housing so it will make contact with housing contact spring (Fig. 20).

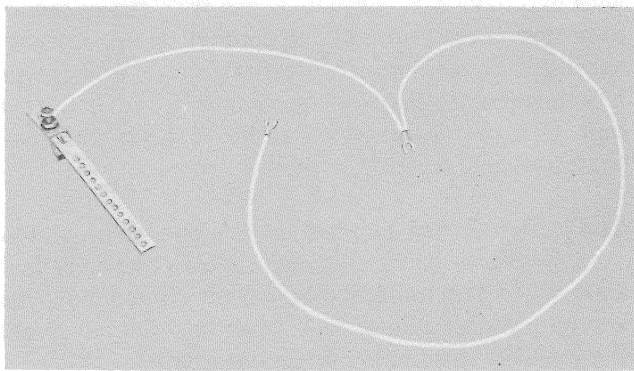
## COMPONENTS

## Alarm Switches and Security Devices

**4.19** The local telephone company shall regulate the installation of these devices. Refer to Division 506, section entitled: Service, Security Devices for additional information.



**Fig. 18—Method of Grounding Coin Collector Housing Assembly, Open Type Installation**



**Fig. 19—P-12C414 Ground Wire Assembly**

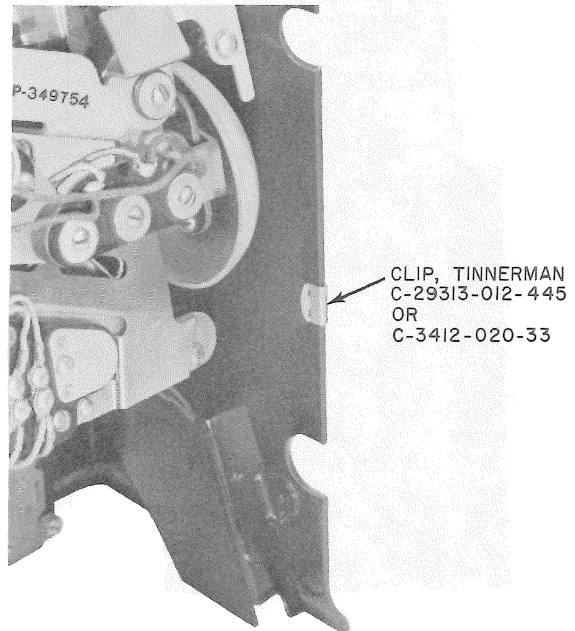
#### **Apparatus Blank, Card Holder, and Coin Gauge Guard**

**4.20** Refer to 2.11 through 2.15.

#### **Out-of-Service Notices**

**4.21** If a coin station is not ready for service when installation work is completed, place KS-7991 sign (Fig. 21 and 22) or E-4914 Form (Fig. 23) on coin gauge so that customers will not deposit coins.

**4.22** A book of E-4914 Forms is included in the packing container of each new coin collector.



**Fig. 20—Method of Grounding Upper Housing to Backplate**



*When coin station is placed in service, leave book of E-4914 Forms with agent and give instructions for use when coin station is out of service.*

**4.23** The KS-7991 sign must be ordered separately and is mounted by means of a No. 8-32 by 3/4 inch RH machine screw and a self retained speed nut, Tinnerman C-6724-832-373 (Fig. 21 and 22).

#### **Relay Cover**



*On 230-, 233-, 234-, and 1234-type coin collectors place P-10E783 plastic dust cover over coin relay before assembling upper housing on backplate.*

## **5. METHOD OF OPERATION**

### **TELEPHONE CIRCUIT**

**5.01** The talking circuit is the same as the one used in conventional telephones, except for the addition of two signal transmitters and an electromagnet in series in the primary circuit, as shown in Fig. 24.

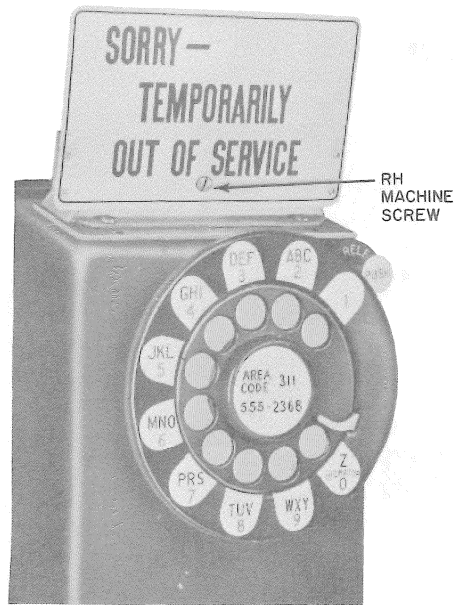


Fig. 21—KS-7991 Sign in Place Over Coin Gauge



Fig. 22—Rear View of KS-7991 Sign

**5.02** Coin signal tones are picked up by the two signal transmitters and carried over the voice path to the local or toll operator, indicating the denomination and number of coins deposited. The two transmitters are in parallel with a 22-ohm resistor. This arrangement controls the volume level and protects the transmitters against excessive current.

**5.03** The electromagnet is a part of the coin chute and is used in conjunction with 10-cent operation. A capacitor is connected in parallel with

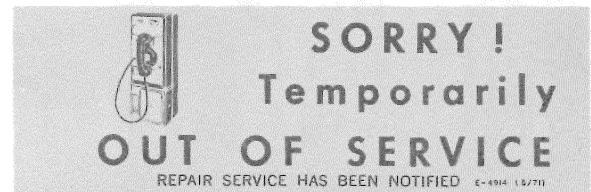


Fig. 23—Form E-4914

the electromagnet winding to minimize its effect on transmission. Network-type circuits equipped with dial have a resistor in series with the capacitor to protect the off-normal dial contacts from excessive arcing. In areas of low-frequency inductive interference, it may be necessary to substitute a unit of higher capacity in order to keep the noise pickup within acceptable limits.

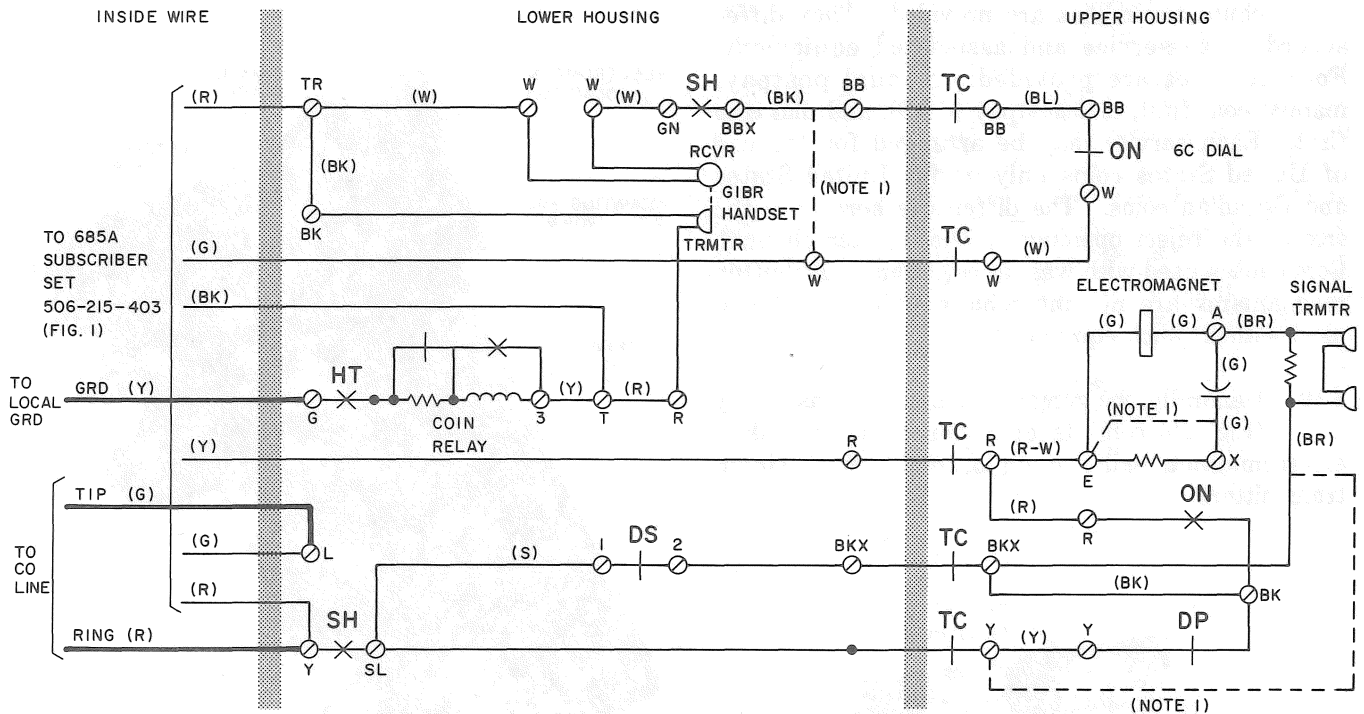
**5.04** The G-type handset is equipped with a 44A varistor bridged across the receiver to reduce acoustic disturbances. A set equipped with an F-type handset has a 37A varistor bridged across the receiver terminals on the backplate.

#### COIN HANDLING FEATURES, UPPER HOUSING

**5.05** Coin-handling features of the upper housing consist of a coin gauge, washer-reject and coin-release pushbutton mechanism (when provided), and coin-chute assembly (see Fig. 5 and 10). These units control the coins and, if accepted, direct them to the coin hopper of the mechanism unit on the lower housing. From the coin hopper, they reach the coin receptacle or return chute. Rejected coins fall directly into the return chute.

#### Coin Gauge

**5.06** The coin gauge is positioned on top of the upper housing and provides nickel, dime, and quarter openings for the deposit of coins. The respective openings are dimensioned to receive



## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CNT AND DNT)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OR A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.

DP - DIAL PULSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS  
 DS - DIAL SHORTING CONTACTS

Fig. 24—Coin First Network-Type Coin Collector Circuit

United States and Canadian coins and guide them to their proper channel in the coin chute.

#### Washer Reject and Coin Release Pushbutton Mechanism

**5.07** The washer reject mechanism (Fig. 10) functions to prevent washers from entering the coin chute. Washers are detected and ejected by star wheels associated with each channel. The bottom spoke of the star wheel is moved downward by the deposited coin. The second spoke moves against the side of the coin near its center, deflecting

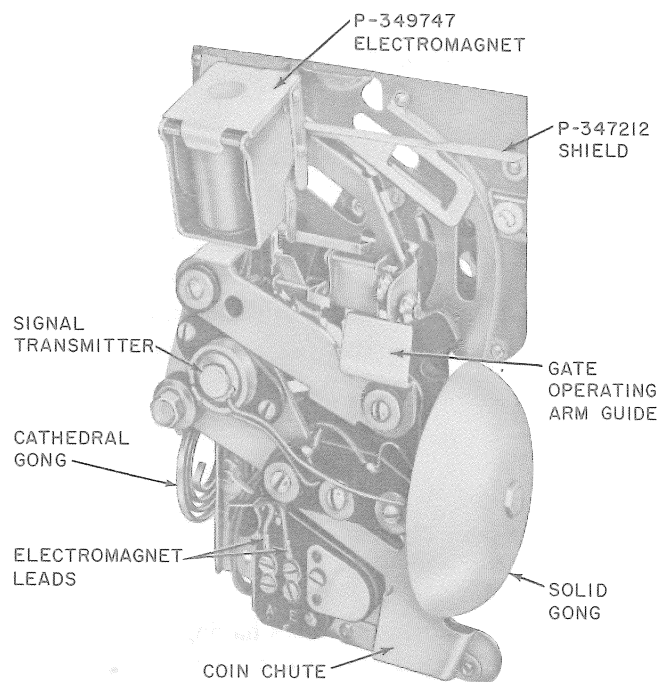
it into the coin chute. Washers having open centers will not be deflected and will drop into the return chute.

**5.08** The operation of the coin release pushbutton moves the upper part of the coin chute away from the washer reject mechanism. This will release washers or coins wedged at this location and allow them to drop into the return chute. This movement of the coin chute also opens the gate associated with the nickel channel, releasing coins held at that location (see 5.14).

### Gong Signal and Chute Assembly

**5.09** Several different types of gong signal and chute assemblies are provided. They differ according to service and associated equipment. Four services are provided: manual postpay, manual coin first, dial postpay (CDO), and dial coin first. Each service may be arranged for the use of United States coins only or for United States and Canadian coins. The difference here is in the size of the reject openings in the quarter channel. Coin chutes used with washer reject and pushbutton mechanisms are not interchangeable with those used without such equipment.

**5.10** Generally, the gong signal and chute assembly (Fig. 25) consists of a coin chute, including electromagnet, and a gong assembly with signal transmitters.

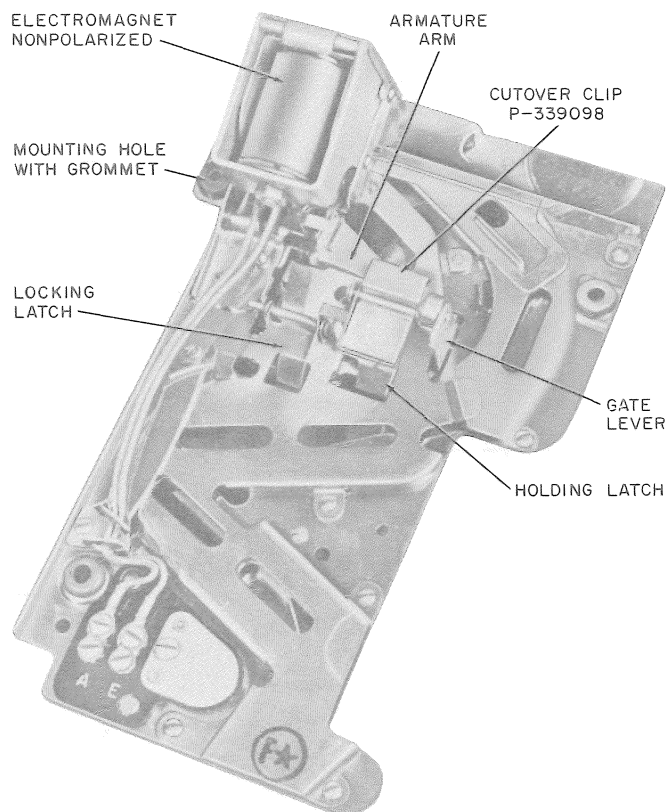


**Fig. 25—Coin First Gong Signal and Chute Assembly**

### Coin Chute

**5.11** The coin chute (Fig. 26) is made of stainless steel and provides nickel, dime, and quarter channels leading to the coin hopper of the mechanism unit. Nickels are routed to strike a solid gong once. Dimes are routed to strike the same solid

gong twice. Quarters are routed to strike a cathedral gong once.



**Fig. 26—Coin First Coin Chute Assembly Equipped With P-339098 Cutover Clip For 5-Cent Service**

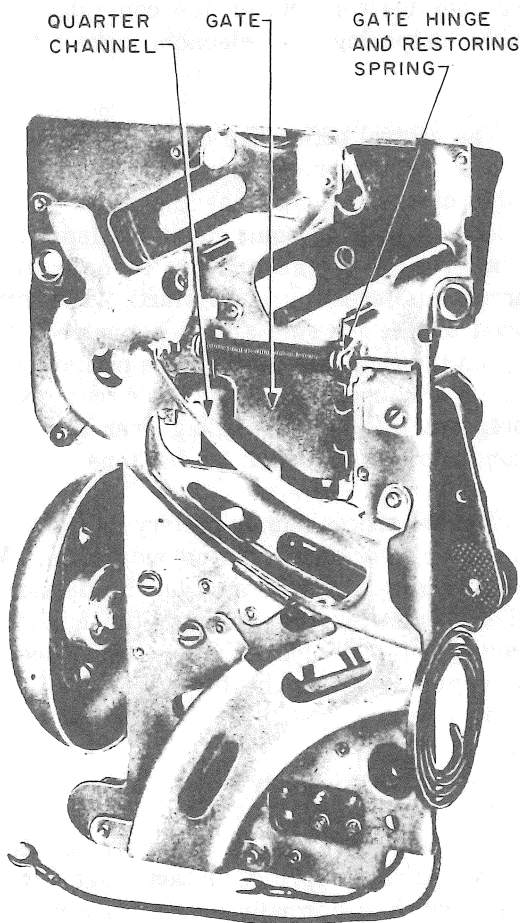
**5.12** Control and reject features are provided in the channels. Each channel rejects coins or discs which are below the minimum dimensions allowed for worn coinage. Such coins or discs leave the coin chute before reaching the gongs and fall into the return chute.

**5.13** Ten-cent operation requires a minimum deposit of two nickels or one dime to initiate a coin first call, or to complete a dial postpay nonfree call. To provide for this service, the nickel channel is equipped with a holding latch which is controlled by a locking latch. The first nickel deposited is stopped and held by the holding latch. The second nickel deposited is deflected by the first nickel into the locking latch. The locking latch is operated by this coin, releasing the first nickel at the holding latch. The two coins pass



on down the channel in succession, each striking the solid gong and dropping into the coin hopper.

**5.14** A hinged gate is provided in the rear wall of the nickel channel opposite the holding and locking latches (Fig. 27). Pennies which may reach the holding latch will be ejected through an opening in the gate. A single nickel deposited and held by the holding latch will be released by the gate and fall into the return chute when the handset or receiver is hung up. The gate is controlled by an operating arm on the switchhook. The gate is open when the switchhook is down and closed when the switchhook is up. Nickels deposited when the switchhook is down will pass through the open gate and into return chute. The gate is also opened by the coin-release pushbutton mechanism.



**Fig. 27—Coin First Gong Signal and Chute Assembly, Rear View**

**5.15** When the gate is open, it protrudes into the quarter channel. A quarter deposited when the switchhook is down will be stopped and held by the open gate until the switchhook is raised. When released by the gate closing, the quarter will continue down its channel, strike the gong, and reach the coin hopper.

**5.16** The position of the switchhook has no effect on the dime channel. Dimes will follow their channel into the coin hopper at all times.

#### **Electromagnet**

**5.17** The purpose of the electromagnet is to arrange for single nickel deposits to meet requirements of toll and overtime charges. This is accomplished by routing nickels around the holding latch after the central office loop is established.

**5.18** Nonpolarized electromagnets are used for coin first service and polarized for postpay service. Both types are energized by the central office battery in series with the loop and telephone set primary circuit. An arm on the electromagnet armature is moved into the nickel channel by the operation of the armature. With this armature arm in the channel, nickels bypass the holding latch. This allows single nickel deposits to continue on down the channel, strike the gong, and drop into the coin hopper.

**5.19** The nonpolarized electromagnet used in coin first service moves the arm into the nickel channel regardless of which direction current is flowing. The electromagnet operates on out calls when dial tone is received or the local operator answers. The electromagnet also operates on in calls, as from an operator completing delayed calls.

**5.20** The polarized electromagnet used in dial postpay service moves its arm into the nickel channel only when the current flow is in a certain direction. The electromagnet is connected in the circuit so that the current received for dialing moves the arm into the channel. At the time a nonfree call from the coin telephone is answered by the called party, the current flow is reversed to the coin station. This reversed flow of current moves the arm out of the nickel channel, which then requires that two nickels or a dime be deposited to complete the call. On calls to or from an operator, the current flow is not reversed, and

the arm is positioned in the nickel channel. This allows single nickel deposits.

### **Gong Assembly**

**5.21** The gong assembly is mounted on the coin chute, as shown in Fig. 25. It consists of a supporting bracket on which are mounted the two gongs and their associated signal transmitters. The solid gong for nickel and dime signals and one signal transmitter are mounted on a metal plate. The cathedral gong for quarter signals and the second signal transmitter are mounted on a bracket. The two units are insulated against vibration from each other and from the coin chute by use of rubber grommets at all mounting points. The support bracket also provides a guide to protect the switchhook gate-operating arm from damage when the upper housing is assembled on the backplate.

**5.22** The signal transmitters are associated with handset-type coin collectors. In the construction originally employed, the gong assembly was supported on hinge lugs in the top of the upper housing to allow the assembly to be swung out for maintenance purposes. The first of this type employed only one signal transmitter. A second signal transmitter was added later to improve the coin signals. Transmitter- and receiver-type coin collectors have the gongs mounted on the sides of the upper housing, and the coin signal is picked up by the talking transmitter. When converted to handset types, these collectors are equipped with a signal transmitter inside the solid gong.

### **MECHANISM UNIT**

**5.23** The mechanism unit consists of a steel base and coin hopper on which are mounted coin-operated and coin-control equipment as required for the particular service involved. The mechanism base is mounted on top of the lower housing, where the base also serves as a cover for the coin receptacle compartment.

### **MANUAL POSTPAY SERVICE**

**5.24** In manual postpay service, coins are deposited only after the operator has completed the connection to the called party. Refund of deposits is not required. The coin hopper serves simply as a guide to direct coins from the coin chute into the coin receptacle. The later-type coin hopper

has clean-out holes to aid in removing stuck coins (see Fig. 13).

**5.25** The central office line circuit for manual postpay service furnishes battery on the ring side and ground on the tip side of the line, the same as for flat-rate individual lines. This requires only a completion of the loop through the telephone primary circuit to operate the line circuit and signal the local operator (loop start).

### **MANUAL OR DIAL COIN FIRST (PREPAY) SERVICE**

**5.26** In coin first service a deposit is required before dial tone is received or the local operator answers. Deposits are refunded if the call is not completed. The coin-relay assembly has a coin trigger which extends into the coin hopper above the coin trap (see Fig. 15 and 16). The first coin entering the hopper forces the trigger down to a tripped position. Tripping of the coin trigger operates contacts on the coin-relay switch assembly, preparing the telephone circuit for out calls.

**5.27** The central office line circuit used with dial coin first service supplies battery on the ring side of the line and has the tip side of the line open. A coin or coins must be deposited to place a ground at the station to operate the line-circuit equipment (ground start). The ground is placed on the tip side and is connected to the battery on the ring side through the primary circuit when the switchhook is up. The line circuit operates and prepares the line for dialing over the tip and ring conductors as indicated by dial tone.

**5.28** Manual offices supply battery on the tip side of the line with the ring side open. With the trigger tripped, the ground on the tip side will signal the operator even though the handset or receiver is not off-hook. The central office cord circuit supplies talking battery over the tip and ring conductors.

### **Coin-Relay Switch Assembly**

**5.29** The coin-relay switch assembly consists of two pairs of spring contacts (see Fig. 23). One pair, which is normally open, closes when the trigger is tripped by a deposited coin and connects ground through the coin-relay winding to the tip side of the line. The connection to the tip side of the line is made through the center tap connection

of the network or induction coil. This balances the talking circuit to ground and prevents excessive inductive noise interference.

**5.30** The second pair of spring contacts is normally closed and is opened when the trigger is tripped. The contacts are wired in parallel with the pulsing contacts of the dial. With the coin-relay contacts closed, the dial-pulsing contacts are shorted. The coin trigger must be tripped and the shorting contacts opened before dialing can be accomplished.

**5.31** Earlier-type coin relays were equipped with ground contact springs only (2-spring relay). Dial shorting was first accomplished by adding one normally made contact to the assembly (3-spring relay).

**5.32** The single-coil, slow-release, coin-relay switch assembly, in addition to ground and dial-shortening contacts, has a 3-spring break-make combination which functions to short-circuit either a resistor or the relay coil as shown in Fig. 28 and as covered in 5.41.

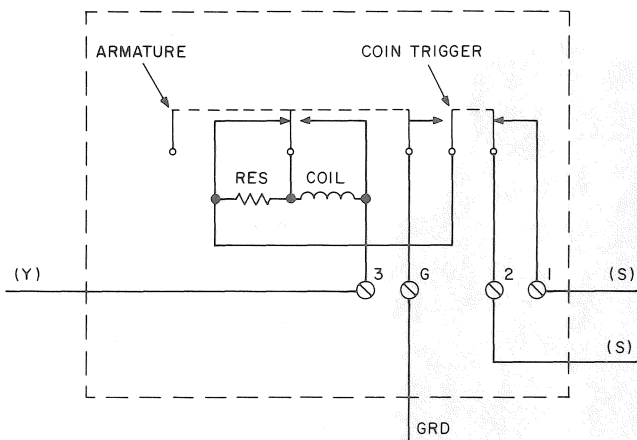


Fig. 28—Single-Coil, Slow-Release Coin Relay

### Coin Hopper

**5.33** For coin first service, the hopper is equipped with a coin trap which stops and holds all coins that enter the coin hopper. The coin trap is held in its horizontal position or released in relation to the position of a coin vane. The coin vane is under the control of the coin relay which

is mounted on the mechanism base, Fig. 15, or on the coin hopper, (Fig. 16).

### Coin Relay

**5.34** The coin relay is operated to its collect or refund position through the tip ground. Positive coin-collect battery or negative coin-return battery (nominally 116 or 125 volts) is applied to the line, as required, under the control of central office equipment or the operator. To clear coins from the hopper, the relay must remain operated for approximately 1/2 second, otherwise the coins may become wedged in the hopper. The tip ground also provides a signal to other central office equipment, showing that coins have been deposited. Coins may be disposed of while the customer is on the line.

**5.35** The operation and subsequent release of the coin relay restores the coin trigger and switch-assembly contacts to their normal position.

### Two-Coil Coin Relay



*Two-coil coin relays are obsolete and cannot be used with Dial Tone First service; consequently, it is recommended that all 2-coil coin relay coin collectors be replaced with single-coil coin collectors or coin telephone sets.*

**5.36** The 2-coil coin relay (Fig. 15) is a polarized relay. Its direction of operation depends on the direction of the current flow through its windings. Positive current pulls the armature down on the right side and operates the coin vane to the left or collect position. Negative current pulls the armature down on the left side and operates the coin vane to the right or refund position. Moving the coin vane from under the coin trap allows the weight of the held coin or coins to swing the coin trap downward. The coins drop into the coin receptacle or the return chute according to the position of the coin vane.

### Single-Coil, Slow-Release Coin Relay

**5.37** The single-coil coin relay (Fig. 16) consists of a nonpolarized armature and relay coil designed for fast operation and slow release. Collect and refund operation of the coin vane is controlled by a polarized selector card located at the back of the relay assembly as shown in Fig. 29. The



selector card is made of nylon and has a small permanent magnet embedded along its upper edge.

**5.38** The selector card is tilted slightly to one side or the other according to the polarity of the current applied to the relay. This is accomplished by two pole-piece extensions, one extension being positioned above each end of the permanent magnet. While in the tilted position, the selector card is moved downward by the operation of the relay armature. This movement guides a cam coupled to the coin vane to the right or to the left according to the direction in which the selector card is tilted.

**5.39** With the selector card tilted down on the right side, the coin vane is moved to the right or refund position. With the left side of the selector card tilted down, the coin vane is moved to the left or collect position.

**5.40** The coin trap is also mechanically opened by the downward stroke of the selector card and restored on the release stroke. This expedites coin disposal and avoids coins, lodging in the trap.

With the coin vane and the coin trap both under the control of the selector card, their movements are synchronized and friction and scoring between these two moving parts are eliminated. The slow-release feature of the relay ensures time for complete disposal of coin deposits even on short coin-battery pulses.

**5.41** The slow-release feature is obtained by short-circuiting the coin-relay winding near the end of the operate stroke (Fig. 28). During the holding period the 1000-ohm resistor is substituted for the short-circuited relay coil. This protects the coin battery resistance lamps in the central office from a current surge and protects the coin-relay ground contacts from excessive arcing when they open while coin battery is still applied to the line. To prevent reoperation of the relay, the ground contacts are opened on the release stroke before the short circuit is removed from the relay coil.

**5.42** With either-type relay, the ground circuit remains closed at the station until the release stroke to ensure proper operation of coin pilot

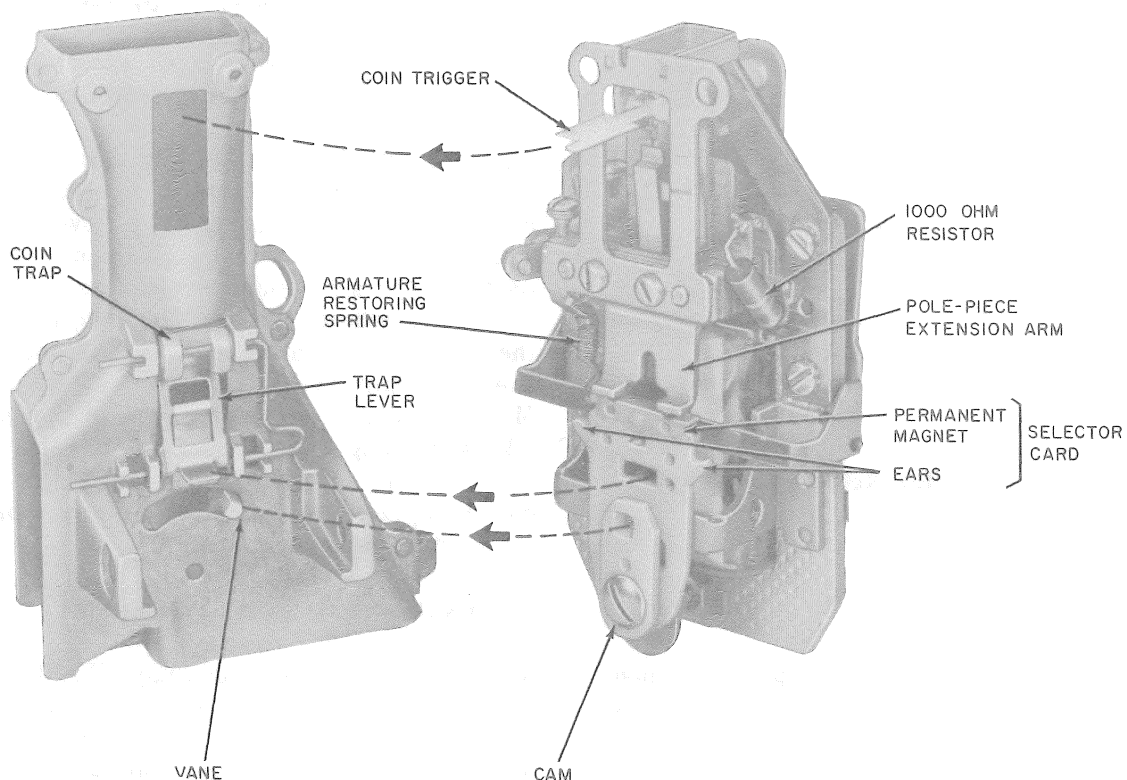


Fig. 29—Coin Hopper and Rear View of Coin Relay

lamps at manual or toll switchboards. On the 2-coil relay the station ground circuit remains closed, and the coin pilot lamp is lighted as long as the collect or refund key is held operated. Due to the self-restoring feature of the single-coil relay; however, the station ground remains closed only during the operate and slow-release holding period. This limits the maximum time the coin pilot lamp will remain lighted but ensures at least 1/4-second appearance, which is considered adequate.

**5.43** The selector card and vane cam are designed so that they center mutually at the end of the release stroke. When the relay is operated manually, the selector card must first be tilted by pressing downward on one of the ears located on either side of the selector card before the armature is closed. This avoids jamming the engaging surfaces of the selector card and the cam. Force applied downward to the ear on the right side of the selector card will operate the relay mechanism in the return direction. Force applied downward on the left side will operate it in the collect direction.

#### **Coin Shield**

**5.44** The coin shield shown in Fig. 15 functions to prevent unauthorized access to the coin hopper. The coin shield is required on all coin first coin collectors which do not have pull-bucket return chutes.

#### **DIAL POSTPAY SERVICE (CDO)**

**5.45** In dial postpay service, dial tone is received, the called number is dialed, and the called party answers before a deposit is required. Refund of deposits is not necessary. Dial postpay service has central office equipment which, when the called party answers on nonfree calls, automatically splits the connection and sends a deposit-coin tone to the calling party. Deposit-coin tone is a low tone to inform the calling party that the called party has answered and that the required coins should be deposited. During the time the connection is split, the battery supply to the coin station is reversed in direction. This current reversal switches the coin collector for the 10-cent initial coin deposit. The first coin, passing through the coin hopper, opens a pair of contacts on the spring assembly, which places a 4450-ohm resistor momentarily in the circuit. The increased loop resistance will cause the central office equipment to remove the

split connection and to switch the circuit for conversation.

**5.46** The central office line circuit for dial postpay service furnishes battery on the ring side and ground on the tip side of the line. This requires only a completion of the loop through the primary circuit to operate the line circuit and prepare the line for dialing as indicated by dial tone (loop start).

**5.47** For dial postpay service, the coin hopper is equipped with a coin trap and a coin vane. The coin vane is positioned permanently to the left, allowing all coins to drop into the coin receptacle. With the coin vane locked in the collect position, a coin shield is not required. A coin-trap counterweight holds the coin trap in a horizontal position unless it is forced downward by a passing coin (see Fig. 14).

**5.48** A contact-spring assembly is mounted on the coin hopper. The assembly consists of a pair of normally closed contacts which are opened by linkage to the movement of the coin trap. This results in the contacts being opened momentarily as each coin drops through the coin hopper and forces the coin trap downward. The contacts are wired in series with the primary circuit of the telephone.

**5.49** A 63CH (4450-ohm) resistor mounted on the mechanism base is wired in multiple with the contact springs in the primary circuit. The resistor is shunted out of the circuit when the contacts are closed and is effective in the circuit when the contacts are opened.

**5.50** A 31A varistor or 446F diode which is mounted on the contact-spring assembly bracket is also bridged across the resistor and the contacts. The varistor or diode is poled so as to be in opposition (open) to the reverse current flow on the line. Under this reverse current condition, the varistor or diode will not shunt out the resistor when the contacts are opened. Normal direction current will flow through the varistor or diode, shunting the resistor, as when coins are deposited with an operator on the line. This reduces objectionable clicks.

## 6. MAINTENANCE

### COIN FIRST (SINGLE-COIL COIN RELAY)

**6.01** When trouble cannot be cleared:

- (a) Notify testdesk.
- (b) Place out-of-service tag over coin gauge.

**6.02** When service is restored, remove tag.

#### A. Tools, Gauges, Cords, and Materials

**6.03** Tools, gauges, cords, and materials which may be required in addition to those normally carried are described in Division 506, section entitled: Coin Telephone Stations Tools, Gauges, Materials.

#### B. Cleaning



*Remove handset from switchhook before removing or replacing upper housing to avoid damage to the gate operating arm. Do not reassemble upper housing without replacing coin relay dust cover.*

#### General Cleaning



*Check operation of coin station following cleaning operations which may affect the mechanism.*

**6.04** To remove loose dirt or dust:

- (a) Use cleaning paper, KS-2423 cleaning cloth or a No. 6 sash brush

**6.05** To remove sticky deposits:

- (a) Use cloth or brush moistened with water.
- (b) Wipe dry.

**6.06** To remove gummy deposits:

- (a) Use cloth or brush moistened with KS-7860 petroleum spirits.



*KS-7860 petroleum spirits is flammable. Use safety precautions when handling.*

- (b) Wipe dry.

#### Coin Gauge

**6.07** To clean dirty or sticky coin gauge openings use moistened pipe cleaner.

#### Coin Chute

**6.08 DO NOT CLEAN COIN CHUTE.**

- (a) Check for dirt at bottom of coin chute.
- (b) Replace if dirty or corroded.
- (c) Upper mounting screws or bayonet guides and springs may be cleaned with a KS-2423 cloth and KS-7860 petroleum spirits.



*Do not lubricate nylon bushings, lower mounting screw, and rubber grommets.*

- (d) Replace if electromagnet armature, latch spring, or gate spring show signs of rust.
- (e) Coin chute should be changed rather than replacing upper housing unless other conditions warrant replacing the housing.

#### Coin Return

**6.09** If coin return is badly corroded, replace instrument.

**6.10** To clean coin return see 6.04 through 6.06.

#### Housing Contacts

**6.11** Clean contacts with No. 320 or *finer* aluminum oxide cloth.

**6.12** Wipe off with KS-16601, List 1 paper or KS-2423 cleaning cloth.

#### Locks

**6.13** Use a 528A tool to remove foreign material from upper housing and security locks.

**Washer Reject and Coin Release Mechanism**

- 6.14** Remove upper housing and coin chute (see 6.30).
- 6.15** If mechanism is damaged, replace upper housing.
- 6.16** To clean:
- (a) Remove dust from reject mechanism with a dry KS-14164 brush.
  - (b) Clean star wheels and pushbutton with KS-7860 petroleum spirits applied with a KS-14164 brush.
  - (c) Wipe dry.
- 6.17** If star wheels still do not move freely, replace upper housing. ***Do not lubricate.***



***Do not attempt to reposition or bend star wheels or castings.***

- 6.18** Lubricate shaft of coin release pushbutton with No. 2B or softer lead pencil.
- 6.19** Reassemble mechanism, see 6.32.

**Coin Relay**

- 6.20** Remove foreign magnetic particles which have accumulated on selector card magnet and pole piece extensions as follows:
- (1) Fold a piece of rubber tape over the end of an orange stick.
  - (2) Depress selector card; then, hold armature operated.
  - (3) Press rubber tape against pole piece extension arms and magnets in selector card so that foreign particles adhere to tape.

**C. Upper Housing****Dial Replacement**

- 6.21** Replace 4- or 5-type dial with 5-type dial.

**Note:** Replacement of a 4- or 5-type dial with a 6-type dial involves added replacement of dial adapter, number plate, dial cord, and possible modification of upper housing; therefore, upper housing should be replaced rather than replacing a 4- or 5-type dial with a 6-type dial.

- (a) To mount 5-type dial on upper housing, insert two 641A tools in dial mounting holes as guide pins.

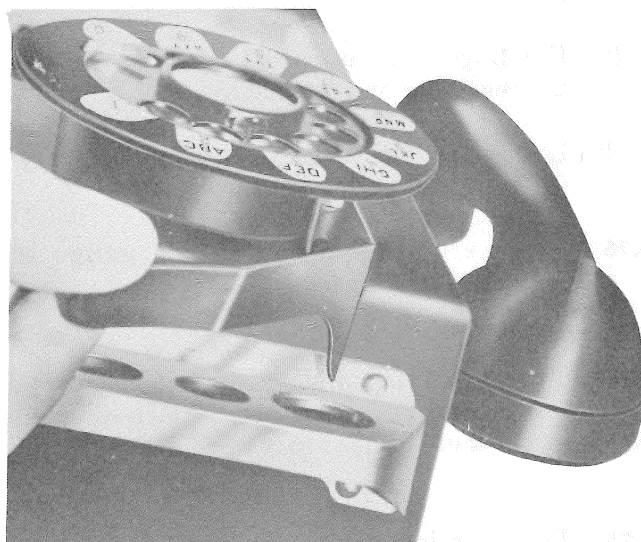
- 6.22** Replace 6-type dial with 6-type dial.

- (a) Assemble mounting studs to dial before mounting dial.

**Coin Deflectors**

- 6.23** The 63A dial adapter used with the 6-type dial incorporates a coin deflector to prevent dropped coins from lodging behind the dial.

- 6.24** A P-14A544 coin deflector is used with the 5-type dial and the 56A dial adapter. P-14A544 coin deflector replaces earlier P-16A805 coin deflector. See Fig. 30 and 31 for installation.



**Fig. 30—Method for Installing P-14A544 Coin Deflector**

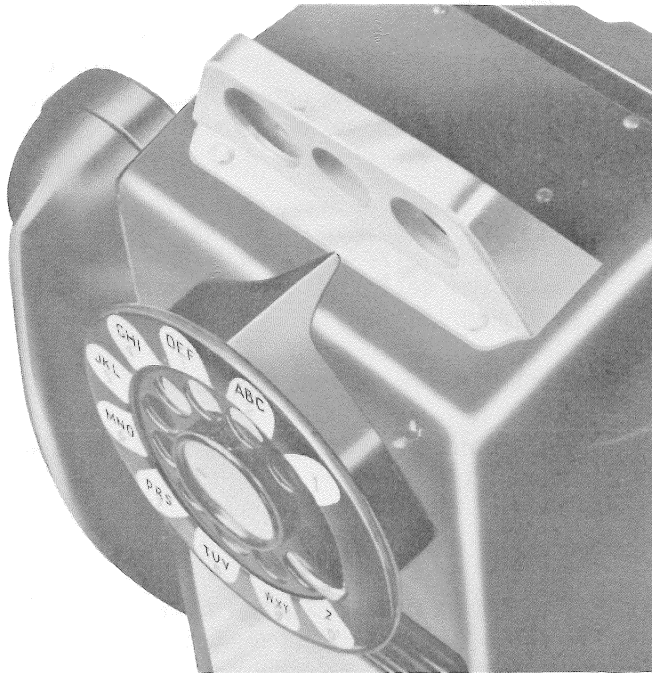


Fig. 31—P-14A544 Coin Deflector in Place

#### Stuck Coins

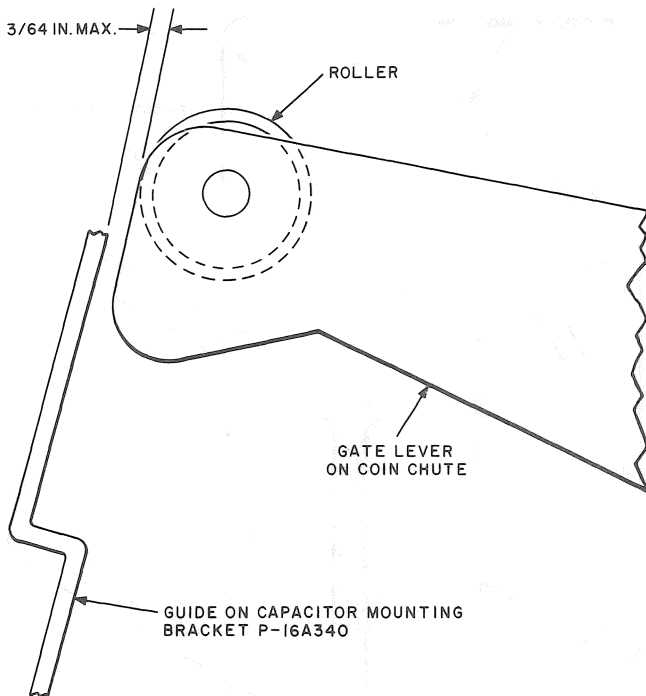
- 6.25** To remove coins or slugs stuck in coin gauge:
- Use fingers or an orange stick, do not use a screwdriver or other metal object.
  - Loosen or remove coin chute if necessary (6.30).
- 6.26** Replace upper housing if coin gauge is mutilated or distorted.
- 6.27** To remove coins or slugs stuck in coin chute use orange stick or other nonmetallic tool. Remove coin chute, if necessary. See 6.30.
- 6.28** Replace coin chute if coin channels are bent or damaged.
- 6.29** Remove slugs, foreign coins, or washers stuck in coin reject opening. Check reject opening with a standard coin before chute is reassembled in upper housing.

#### Coin Chute Replacement

- 6.30** To remove coin chute from upper housing:
- Disconnect attached leads.
  - Loosen filter, if present and leave filter hanging loose.
  - If gong signal assembly is mounted on swing type bracket:
    - Remove mounting screws and swing out of way.
  - Remove mounting screw.
  - Remove bayonet guides by pushing them toward coin chute and rotating one-fourth turn in either direction.
  - Lift coin chute from upper housing.
- 6.31** If existing coin chute is equipped with gong signal assembly, capacitor, or resistor, and the replacement chute is not so equipped, remove items and place on new chute.
- Note:* End of gate operating arm guide on capacitor mounting bracket should clear gate lever (Fig. 32).
- 6.32** To reassemble coin chute in upper housing, reverse removal procedure.
- Caution: Bayonet guides not securely fastened may fly out when coin release pushbutton is depressed.*

#### Coin Chute Alignment

- 6.33** Check chute alignment with upper housing removed from lower housing and in a vertical position.
- Deposit nickel in 5-cent slot of coin gauge. Coin shall pass freely from gauge into chute. Coin should stop at first latch.
  - Deposit second nickel. Locking latch should release, allowing coins to continue through channel.



**Fig. 32—Clearance Between Guide and Gate Operating Arm**

(c) Deposit dime and quarter in 10-and 25-cent slots of coin gauge, respectively. Coins shall pass freely through chute.

(d) Deposit nickel in 25-cent slot of coin gauge: Coin shall pass freely from gauge into chute and pass through coin return channel.

**6.34** If coins do not enter chute freely, check that chute is properly positioned on mounting flanges, and that mounting screw and bayonet guides are secure.

- Do not use washers to align chute.
- Do not attempt to straighten distorted chutes.

**6.35** If checks described fail, try another chute. If coin still fails to enter chute freely, replace upper housing.

#### Coin Signals

**6.36** Make certain coins strike signal gongs at time coin chute alignment tests are made.



*Final judgment of coin signal tones shall be determined by the operator.*

**6.37** Coin signals shall be as follows:

(a) When a nickel or quarter passes through the coin chute, the associated gong should emit one clear signal.

(b) When a dime passes through the chute, the gong should emit two clear signals.

(c) If signal is poor:

- Check for interference caused by improperly dressed wires.
- Check that gongs are the proper type and fastened securely.
- Check for broken coin signal transmitter wires.

**6.38** Signal gongs

- Oval gongs should be mounted so that punch mark is within 1/8-inch of the center plane of the gong and at right angles to face of gong mounting bracket.
- Round gongs may be rotated to any position.
- Make sure quarter does not override quarter gong.

**6.39** Replace coin chute, if satisfactory signals cannot be obtained.

#### Coin Release Mechanism

**6.40** Coin chute shall rest against both flanges of frame assembly, not against pushbutton mechanism.

**6.41** When pushbutton is fully depressed top of the coin chute should move approximately 1/4-inch. Gradual release of pushbutton should allow coin chute to return freely to its normal position.



*If cardholder mounting screw interferes with electromagnet cover, clip off end of screw.*

**6.42** Pushbutton should not bind at any point over its entire length of travel.

**6.43** Replace upper housing if pushbutton does not meet requirements in 6.42.

#### Cord Interference

**6.44** Cords or wiring should not interfere with passage of coins through coin chute or with any moving parts.

#### Security Lock

**6.45** Upper housing may be equipped with KS-19277 lock assembly. When upper housing is removed, apply KS-19094 antiseize compound to threads of bolt or stud fastener. Refer to Division 506, section entitled: Service, Security Devices for additional information on KS-19277 lock assembly.

#### 50K Apparatus Blank

**6.46** All 50K apparatus blanks that do not meet company standards shall be replaced with 50K-4 (chrome) apparatus blank (Fig. 8).

**6.47** To replace 50K apparatus blank:

- (1) Remove upper housing.
- (2) Remove three No. 4-36 by 9/32 RHM screws.
- (3) Install new apparatus blank using reverse procedure.

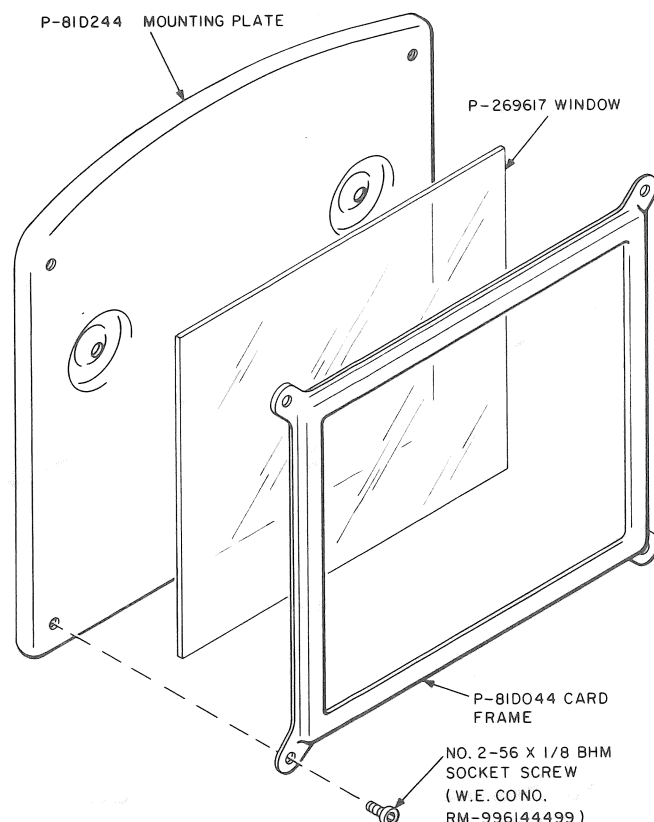
**6.48** Replace damaged or missing screws and plastic windows per Fig. 33.

#### 8B Card Holder

**6.49** All 8B card holders that do not meet company standards shall be replaced with 8B-44 (chrome) card holders (Fig. 9).

**6.50** To replace 8B card holder:

- (1) Remove upper housing.



**Fig. 33—50K-44 Apparatus Blank**

- (2) Remove three No. 4 hex nuts.
- (3) Install new 8B card holder using reverse procedure.

**6.51** Replace damaged or missing screws and plastic windows. Slot head frame screws shall be replaced with No. 2-56 by 1/8 BHM socket screws (Fig. 34).

#### D. Lower Housing and Backplate Assembly

##### Handsets

**6.52** Refer to Fig. 35 for routing and securing handset cord in 235- and 1235-type coin collectors.

**6.53** Refer to Division 506, section entitled: Service, Security Devices, for routing and securing handset cord in all other type coin collectors.



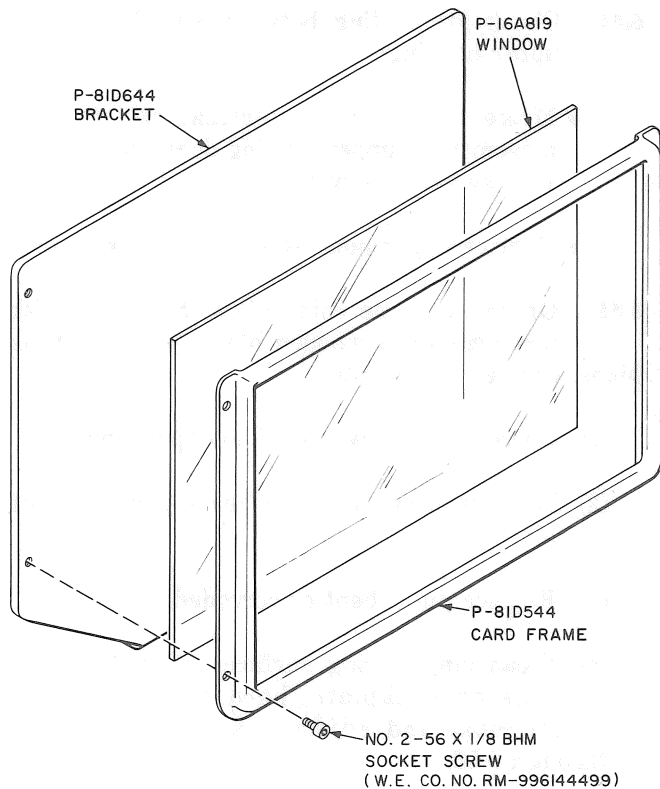


Fig. 34—8B-44 Card Holder

### Antifraud Transmitter Unit

**6.54** The T2 and T3 transmitter units (Fig. 36) have a protective grid to prevent fraudulent operation of the coin collector. The T3 (Fig. 37) unit has screw terminals for use with spade tip conductors.

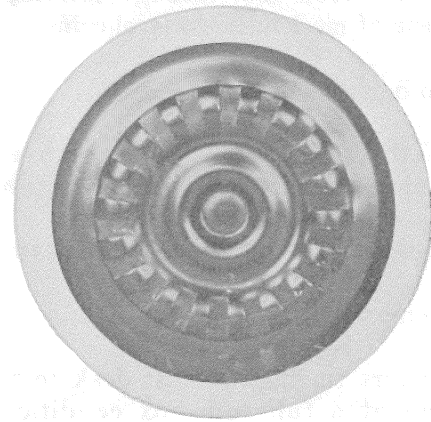


Fig. 36—T2 and T3 Transmitter Units, Front View

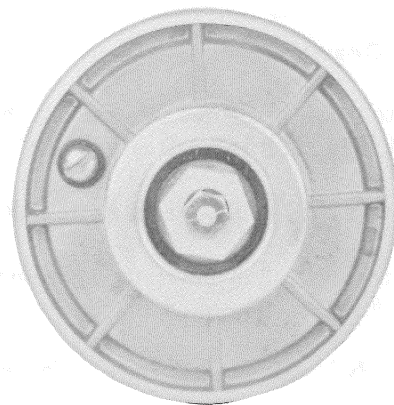


Fig. 37—T3 Transmitter Unit, Rear View

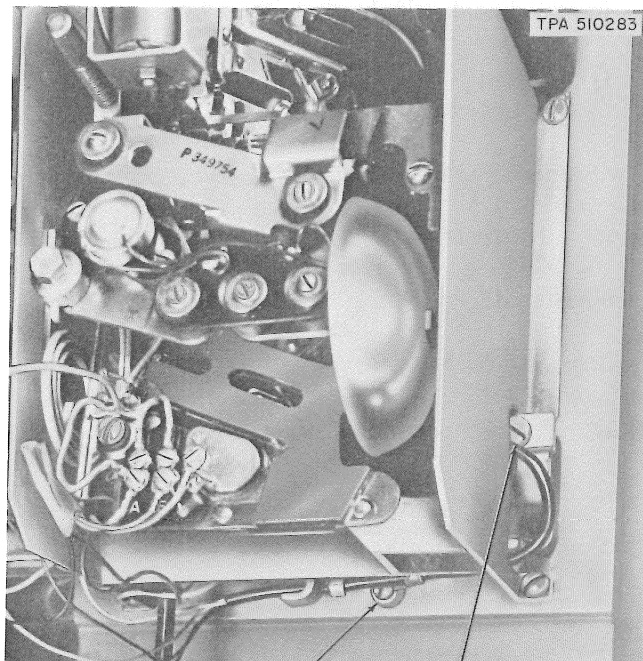


Fig. 35—Location of Armored Cord Mounting Hardware in 235- and 1235-Type Coin Collector

### Defective Capacitor

**6.55** Replace 195C capacitor if filling compound is leaking or container is collapsed.

### 37A Varistor

**6.56** If varistor is used, ensure that it is properly connected.



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- 6.57** Replace varistor if insulating finish on lead-out terminal is cracked or chipped.

### Full Coin Receptacle

- 6.58** To clear coin paths blocked by full coin receptacle:
- Insert 139B tool through leveling hole in base of mechanism to level coins.
- 6.59** To determine coin level:
- (1) With tool touching coins, move sliding indicator as far downward as possible.
  - (2) Read scale at top of sliding indicator.
  - (3) Remove tool
- 6.60** Report findings to test desk to prevent a repeated full coin box condition before collection.
- 6.61** If service cannot be cleared, place out-of-service sign or tag (Fig. 21, 22, and 23).

### Switchhook Operation

- 6.62** Switchhook shall not be cracked, broken, or bent, and shall move freely. Test as follows:
- (1) *Slowly* lift handset from switchhook:
    - Switchhook shall move upward and come to a positive stop against backplate.
  - (2) *Slowly* lower handset onto switchhook:
    - Switchhook shall move downward and come to a positive stop against backplate.
    - If failure occurs, check operation of gate on coin chute.
    - See 6.69 through 6.72 for gate operating arm adjustments.
- 6.63** Replace switchhook if failure is due to over travel caused by worn switchhook stops.

- 6.64** Check for binding between switchhook and upper housing:

- Make certain that vertical and lateral movement of upper housing does not interfere with switchhook operation.
- Replace upper housing if switchhook binds.

- 6.65** On earlier type coin collectors (those with terminals on a wooden block), if switchhook binds, proceed as follows:

- (1) Loosen set screw and remove pivot pin.
- (2) Take care not to burr bearing surface of pin.
- (3) Replace pin if bent or corroded.
- (4) Clean pin, bearing surfaces of switchhooks, lugs on backplate, hard rubber stud on switchhook, and adjacent spring. See 6.04 through 6.06.
- (5) Lubricate with 2B or softer lead pencil.
- (6) Reassemble switchhook. Pivot pin shall be within 1/64- to 1/32-inch from end of hole in switchhook. Tighten switchhook.
- (7) Replace coin collector, if above operations do not clear trouble.

### Switchhook Replacement

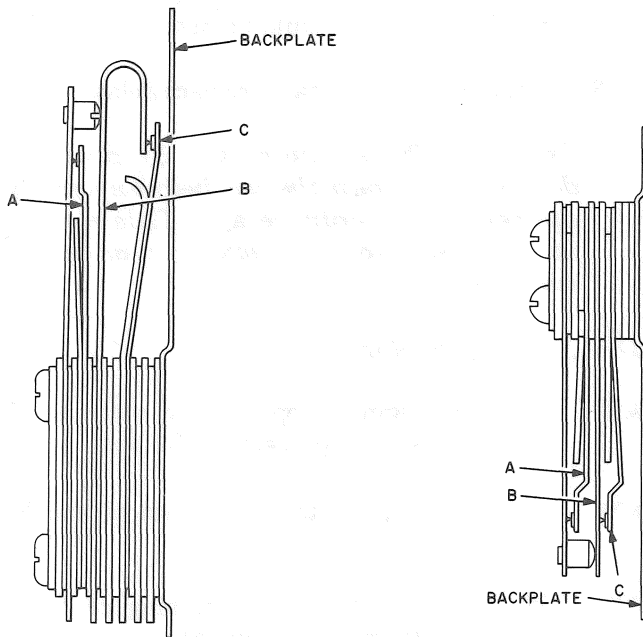
- 6.66** Refer to Division 506, section entitled: Service, Security Devices, for switchhook replacement.

### Switchhook Contact Springs

- 6.67** Adjust contact follow and separation as follows:
- All contacts shall have perceptible follow (approximately 1/64-inch).
  - Contact pairs of twin contacts shall make at approximately the same time.
  - Minimum separation between mating point-disc type and bar type contacts shall be 0.025 and 0.016 inch, respectively.

- Clearance between noncontacting springs and between spring and backplate is shown in Fig. 38.

Use 265C tool to burnish contacts.



**NOTE:**

MIN. 1/32 IN. CLEARANCE BETWEEN SPRINGS A AND B, AND BETWEEN SPRING C AND BACKPLATE. JUDGE VISUALLY.

**Fig. 38—Spring Clearance**

**6.68** Spring pile-up shall be tight and contacts shall be aligned so that contact point falls within circumference of opposing contact disc, or a contact bar falls within length of opposing contact bar.

- If switchhook spring pile-up is loose on earlier model coin collectors (having terminals on a wooden block), tighten spring pile-up; if contacts do not line up, loosen spring pile-up, realign contacts and retighten.
- On coin collectors having terminals in the spring pile-up, replace coin collectors if spring pile-up is loose or contacts do not line up.

### Gate Operating Arm Adjustment

**6.69** With upper housing in place and handset off-hook check as follows:

- (1) Deposit a single nickel which should be stopped by holding latch.
- (2) Lower switch hook slowly to release nickel.

- There should be perceptible switch hook travel before and after nickel is released by holding latch.

**6.70** If requirement in 6.69 is not met, check operating arm using 178A or 178B gauge (Fig. 39).

- With switchhook in down position, bottom surface of curved end of arm shall be between the two arcs and lines A and B.
- With switchhook in up position, bottom surface of curved end of arm shall be between the two arcs and lines C and D.

**6.71** To adjust position of gate operating arm:

- Bend lugs on each side of support bracket with 466A tool.
- On early type, adjust spring arm only.

**6.72** Replace switchhook if requirements cannot be met by adjustment.

### Coin Relay and Hopper Tests

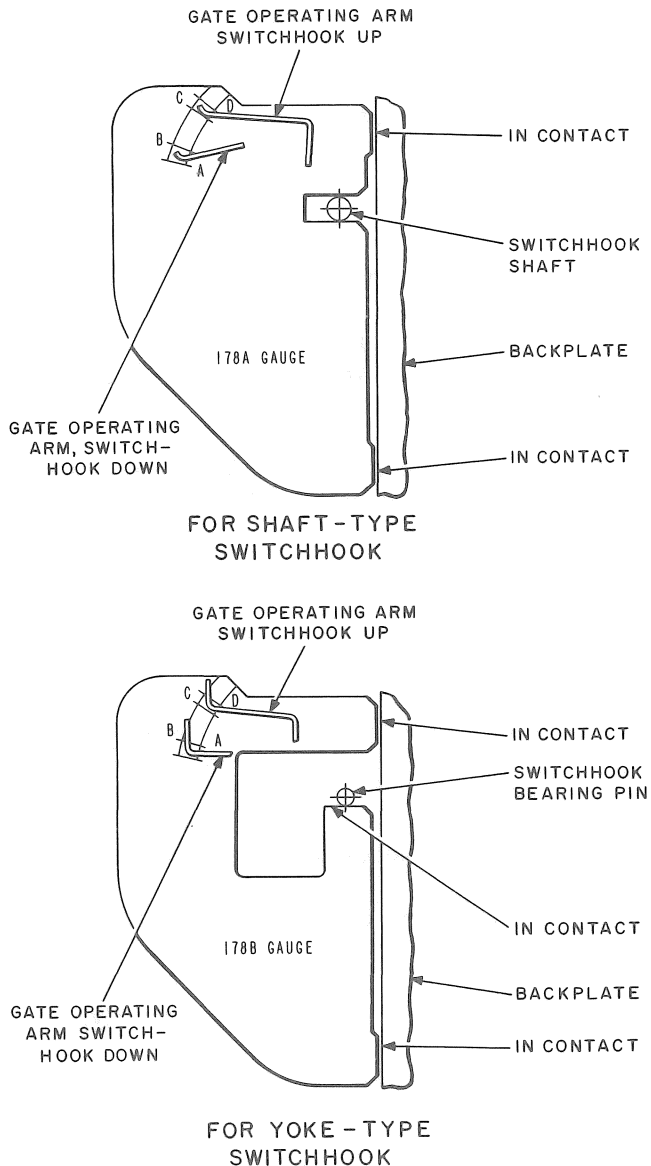
**Note:** No modification or adjustment of coin relay or hopper other than those specified herein shall be made.

### Ground Contact Springs

**6.73** Remove P-10E783 dust cover from coin relay.

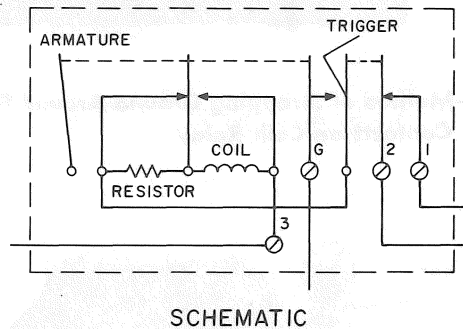
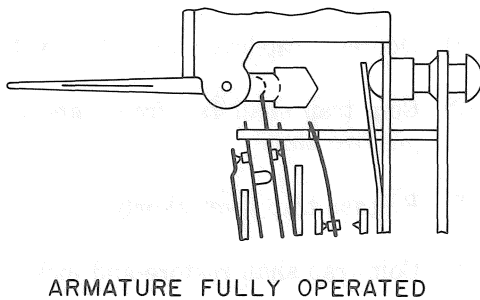
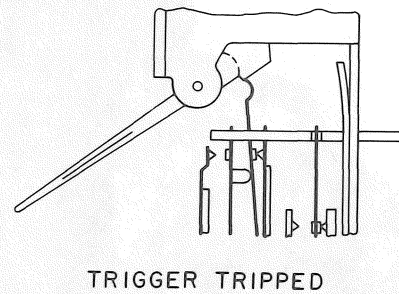
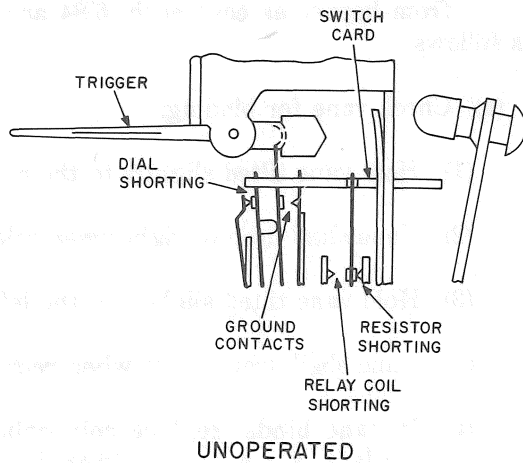
**6.74** In coin first switching systems, connect hand test set across line terminals and trip coin trigger. Dial tone should be heard. If not:

- (1) Verify presence of central office battery and station ground.



**Fig. 39—Use of 178-Type Gauge**

- (2) If contacts make firmly, but test open, burnish with 265C tool.
  - (3) If dial tone is still not heard, replace relay.
- 6.75** Lubricate surface between trigger and contact spring with 2B or softer lead pencil (Fig. 40).
- 6.76** An open resistor will result in no coin pilot light at testboard. Verify as follows:
- (1) Connect hand test set across line terminals with coin trigger not tripped.
  - (2) Close relay armature to its full extent of travel. Dial tone should be heard.
  - (3) If dial tone is not heard, replace relay.
- Caution:** Tilt selector card by pressing downward on one of the ears before manually operating the coin relay. This avoids jamming selector card and cam engaging surfaces.
- Dial Shorting Springs**
- 6.77** With coin trigger unoperated, contacts shall be made and have perceptible follow.
- 6.78** With coin trigger tripped, contacts should be open.
- 6.79** Contacts shall shunt dial pulsing contacts when coin trigger is unoperated. Check as follows:
- (1) Provide ground on line by inserting paper clip or equivalent between ground terminal and spring pile-up of No. 4 spring (Fig. 41).
- Note:** Make sure paper clip does not touch the spring contact portion of No. 4 spring. Avoid making contact with No. 3 terminal.
- (2) Place upper housing on coin collector and listen for dial tone.
  - (3) When dial tone is heard, dial any digit except "0" 02 "1". Dial tone should not be broken.
  - (4) Remove upper housing.
  - (5) Remove paper clip.
  - (6) If dial tone is broken, burnish contacts with 265C tool, check housing transfer spring contacts, and wiring for continuity, and repeat test.



## NOTE:

ON RELEASE AND RETURN TO UNOPERATED POSITION,  
GROUND CONTACTS OPEN BEFORE RELAY COIL  
SHORTING CONTACTS OPEN.

Fig. 40—Contact Spring Assembly

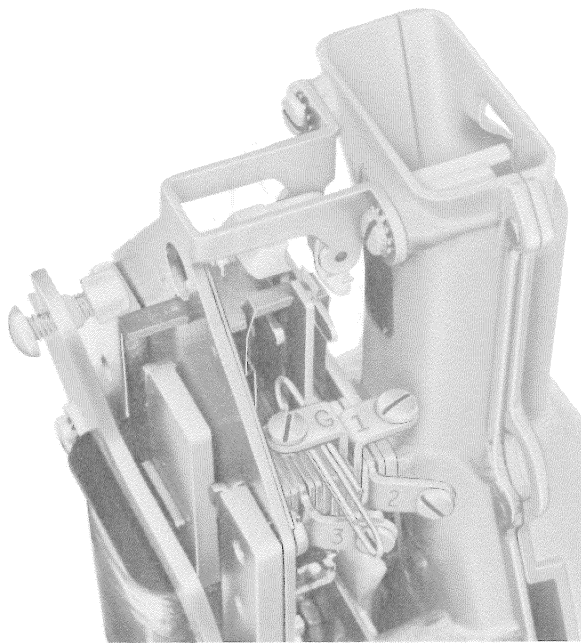
6.80 Replace dust cover.

### Trap and Vane Release Test

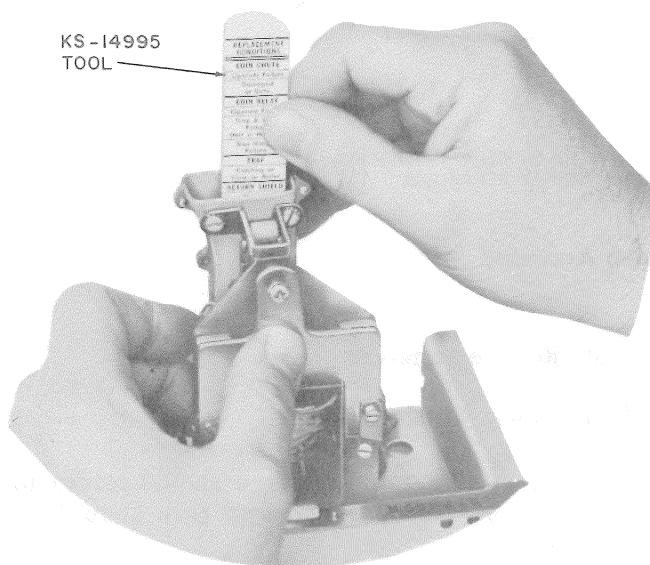
**Note:** Disconnect ground from coin relay while making this test at manual stations.

6.81 Test as follows:

- (1) Manually close coin relay armature to its full extent of travel.
- (2) Insert KS-14995, L3 tool into hopper to operate trap to the limit of its travel (Fig. 42).
- (3) Release armature.
- (4) Slowly withdraw tool.
- (5) Armature, trap, and vane should return to nonoperated position and trap should be locked.
- (6) Make test three times in both collect and refund positions, pressing left side of selector card ear for collect and right side for refund.
- (7) If mechanism fails to restore properly, check mounting for binding.



**Fig. 41—Method of Strapping Ground Around Ground Contacts on Coin Relay**



**Fig. 42—Trap and Vane Release Test (Single Coin Relay)**

**6.82** If mechanism still fails, remove coin relay from hopper as covered in 6.84 and proceed as follows:

- (a) Check vane for binding:
  - (1) Hold vane tilted slightly to the right.
  - (2) Vane shall drop to right when released.
  - (3) Hold vane tilted slightly to the left.
  - (4) Vane shall drop to left when released.
  - (5) If vane binds, replace coin collector or replace vane as outlined in Section 506-100-110.
- (b) Check operating, restoring, and locking of coin trap.
  - (1) Depress trap-lever tab slowly with finger.
  - (2) Coin trap shall fall freely and come to a positive stop.
  - (3) Release trap lever slowly.
  - (4) Coin trap shall restore and lock.
  - (5) If trap-lever spring is missing or lacks sufficient tension, replace or retension spring. See 6.88.
  - (6) Replace defective coin trap, trap lever, or pin as required. See 6.89.

**6.83** Remount relay and repeat test.

- (a) If mechanism fails, replace relay.
- (b) If mechanism still fails, replace coin collector.

#### Replacing Coin Relay

**6.84** To remove coin relay from hopper:

- (1) Remove wiring and four mounting screws.
- (2) Slide relay forward to clear trap and vane and lift upward.

**6.85** To replace relay on hopper:

- (1) Move vane to left.
- (2) With trigger tripped, place relay on hopper.
- (3) Slide relay back until trigger enters opening hopper and trap-lever tab enters slot in selector card (Fig. 29).
- (4) Close armature manually by pressing downward on ear on left side of selector card.
- (5) Slide relay back, vane stem should enter hole in cam and mounting screw holes should line up.
- (6) Replace mounting screws.
- (7) Trigger should have some end play and armature, trap, and vane should operate and release without binding.
- (8) If trigger binds, loosen upper mounting screws.
- (9) If trigger is free with upper mounting screws loose, retighten screws evenly.
- (10) Replace relay if trigger still binds.

**Coin Trap and Associated Parts****6.86** Check coin trap spring tension as follows:

- (1) Manually operate the coin relay armature to its fully closed extent of travel.
- (2) Allow relay to slowly return to its nonoperate position.
- (3) Insert KS-14995, List 3 tool into hopper (Fig. 42). Apply firm downward pressure with tool on coin trap in hopper throat; but **DO NOT FORCE** down enough to bend or break parts.
- (4) If this firm **but not excessive** downward force does not cause the trap lever spring to release the trap, the existing spring is operating adequately. If the trap is released by this action, a new 840157333 wire spring should be installed.

**6.87** After removing coin relay (6.84) install 840157333 trap spring (Fig. 44) as follows:

**Note:** A weakened or broken phosphor bronze spring can remain in the hopper assembly after the new wire type spring is installed.

- (1) Move trap pin to the right so that left end of pin is flush with hopper guide.
- (2) Holding notched left leg of new spring at an angle away from hopper, slide the right notched leg of the spring under trap pin.
- (3) Swing loose end of spring across face of trap lever and position notch of left leg in alignment with end of trap pin.
- (4) Push trap pin to the left over and through the left leg notch of the new spring, until the trap pin detents.
- (5) Install coin relay (6.85).

**6.88** To remove trap-lever and coin trap:

- (1) Remove coin relay from hopper (6.84).
- (2) Move vane to right.
- (3) Remove trap pin (Fig. 43) by sliding vertical portion over boss on front of hopper.
- (4) Turn coin trap sideways and remove through opening.

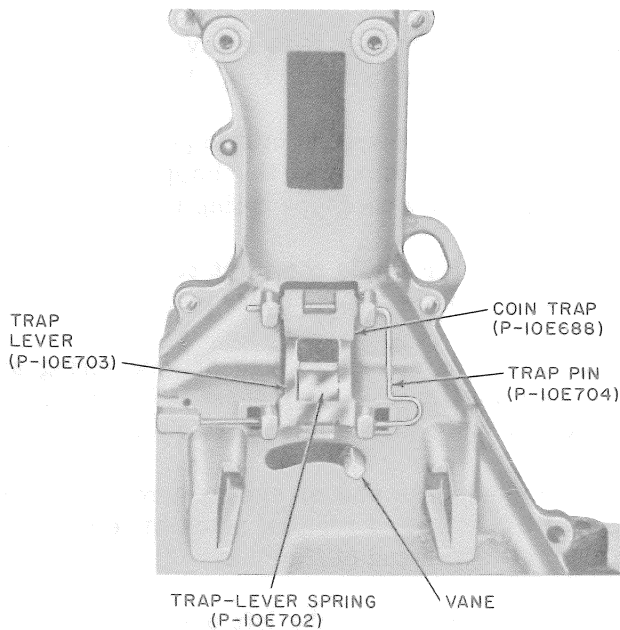
**6.89** To replace coin trap and trap-lever:

- (1) Partially insert trap pin into hole in hopper (Fig. 44) and place trap-lever on trap pin.
- (2) Insert coin trap in hopper and engage pin in trap (Fig. 44).



**Always install a wire type trap lever spring (6.87) when installing or replacing a coin trap.**

- (3) Push trap pin into position.
- (4) Check operation per Table E.
- (5) Replace relay on hopper per (6.85).



**Fig. 43—Trap-Lever Spring and Trap-Lever Assembly**

#### Grounding Coin Collector Housing

**6.90** Check that grounding clip, (Tinnerman C-29313-012-445 or C-3412-02C-38) is in place on upper housing.

**6.91** Backplate assembly should be grounded as covered in Part 4.



*Existing indoor booths which are not equipped with the No. 14 insulated ground wire assembly shall be grounded the same way as open-type installations.*

#### Pull Buckets



*Damaged pull buckets, broken or weak springs and defective shafts may be replaced in the field. Cash compartment must be unlocked and coin receptacle removed to allow access to split end of pull bucket shaft. Cash compartment need not be opened when replacing a plastic pull bucket. See 6.99.*

#### Removal and Installation of Metal Pull Bucket

**6.92** To remove:

- (1) Use diagonal pliers to pry up tabs on split end of pull bucket retaining shaft (Fig. 45).

- (2) Compress tabs with pliers to line up with shaft.
- (3) Drive shaft from housing using hammer and drive punch.
- (4) Swing pull bucket to open position and pull forward until ends of springs are exposed.
- (5) Use TP-75503 spring hook to disconnect springs from coin chute crossbar.
- (6) Disconnect springs from pull bucket crossbar.

**6.93** To install:

- (1) Use TP-75503 spring hook to assemble two new springs on pull bucket crossbar (Fig. 46).
- (2) Hold pull bucket with coin recess upward, supporting springs with fingers so springs extend slightly into chute opening (Fig. 47).
- (3) Use TP-75503 spring hook to engage springs on crossbar in coin chute (Fig. 48).
- (4) Insert and hold pull bucket in normal position.
- (5) Use orange stick or equivalent to line up holes in pull bucket and housing.
- (6) Insert P-27E462 stainless steel shaft in housing and force fit using hammer and drive punch (Fig. 49).

**6.94** If pull bucket fails to operate properly, replace coin collector.

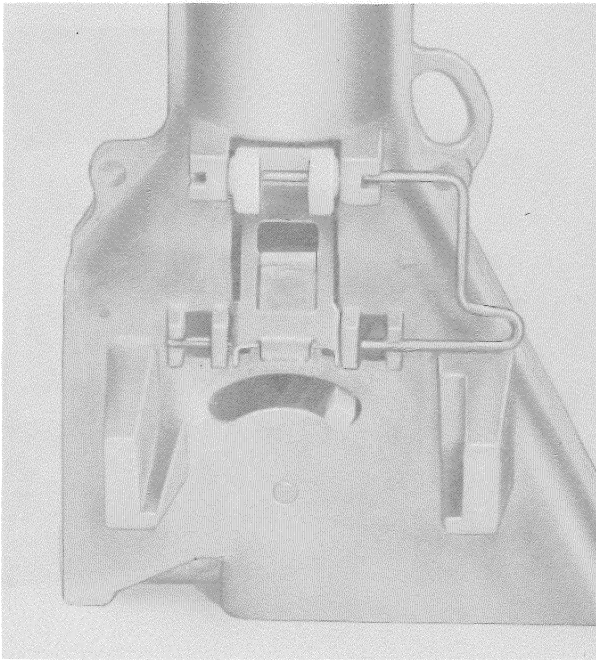
#### Removal of Plastic Pull Bucket

**6.95** Replace damaged or inoperative plastic pull buckets with metal pull buckets.

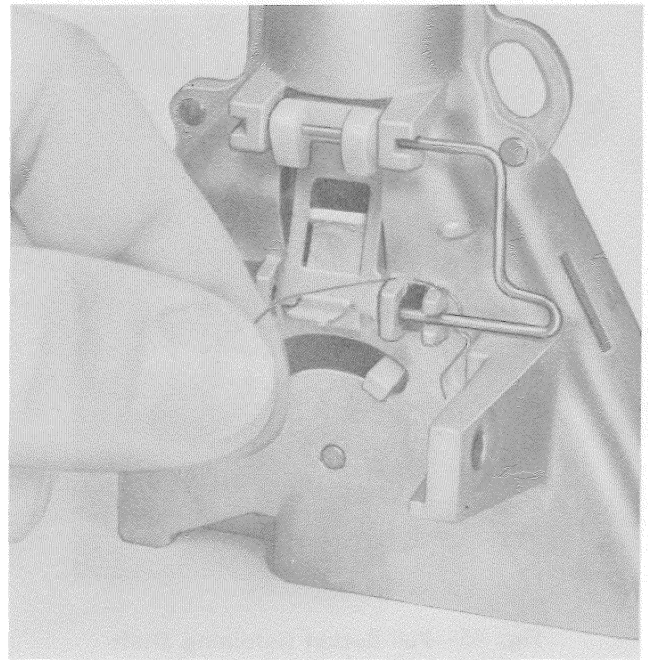
**6.96** To facilitate replacement of pull bucket without removing coin receptacle, proceed as follows:

- (1) Use hammer and cold chisel to break away lower part of plastic pull bucket which encloses the shaft.

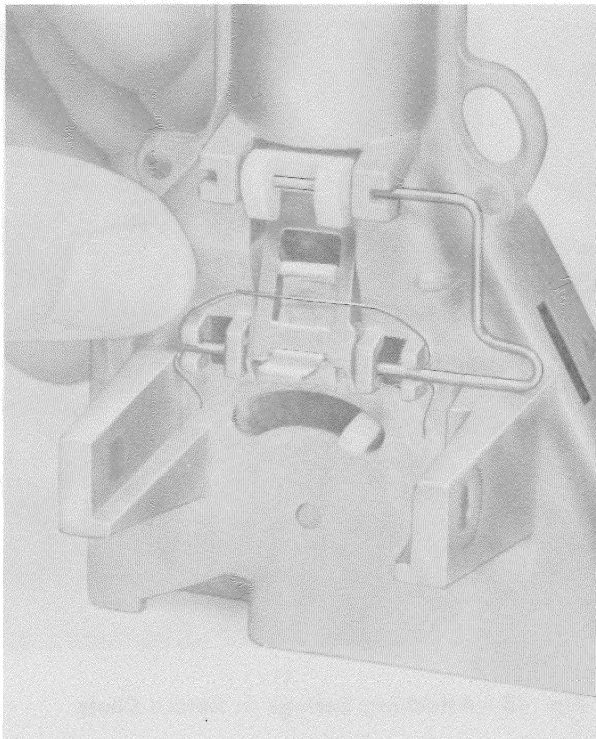




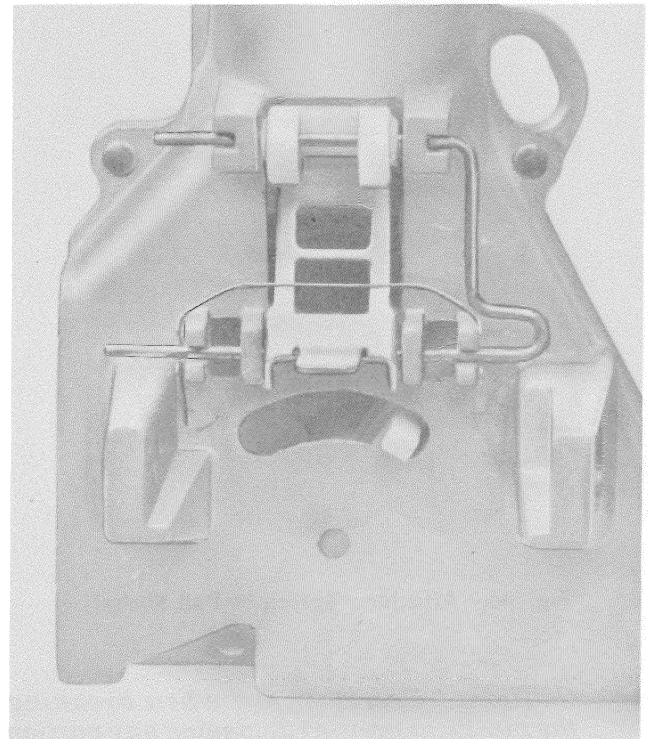
STEP 1



STEP 2



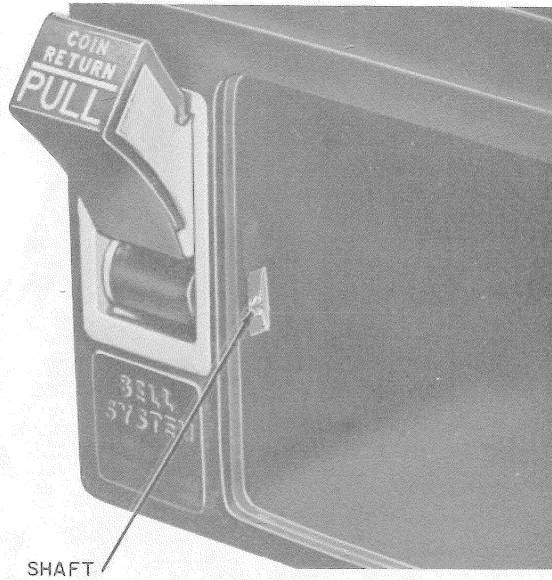
STEP 3



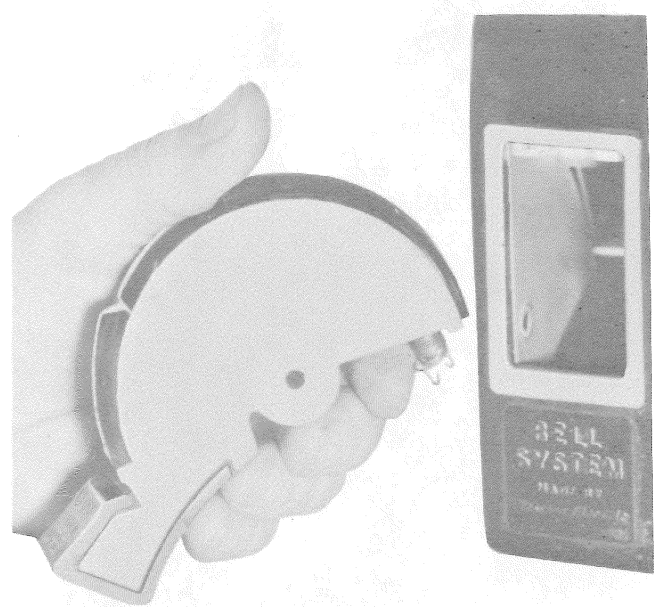
STEP 4

**Fig. 44—Installing 840157333 Trap Level Spring**





**Fig. 45—Pull Bucket Retaining Shaft**



**Fig. 47—Inserting Pull Bucket in Return Chute**

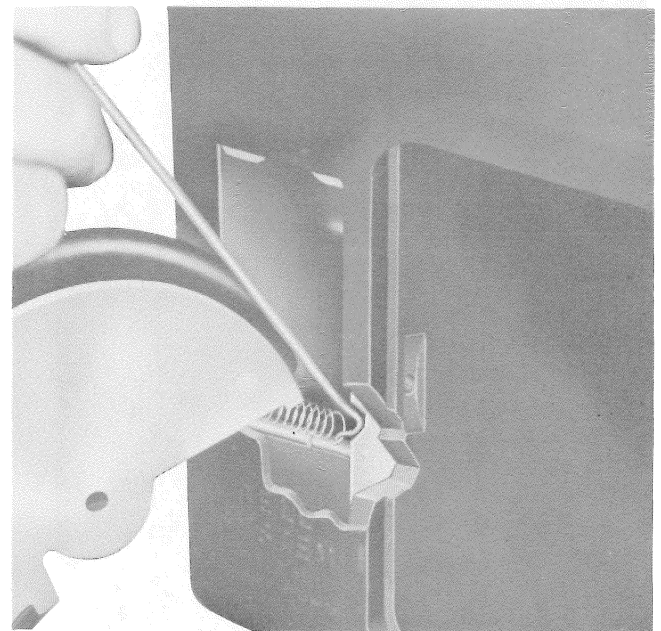


**Fig. 46—Attaching Spring to Pull Bucket**

**Caution:** Exercise care when breaking the plastic to prevent damaging any portion of the lower housing.

- (2) Grip shaft with a pair of diagonal pliers and apply pressure horizontally to the left to remove shaft from the housing.

**6.97** Install new pull bucket as outlined in 6.93.

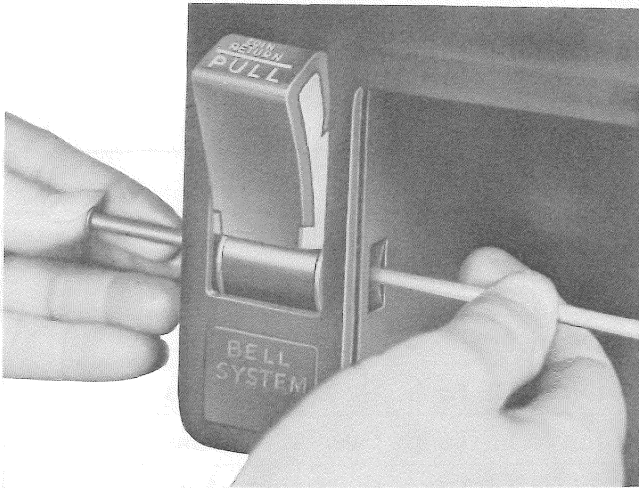


**Fig. 48—Attaching Springs in Return Chute**

#### **E. Final Tests**

##### **Vertical Play**

- 6.98** Vertical play of upper housing should not exceed 1/32-inch.



**Fig. 49—Inserting Shaft in Housing**

**6.99** If vertical play is in excess of 1/32-inch, one or two P-12A745 spacer plates may be added as required.

- Spacer plate is 0.032 inch thick, with a turned edge, which gives it an effective thickness of 0.055 inch if positioned upward.
- Spacer plates may be used with turned edge up or down depending on the thickness required.

**6.100** Spacer plates are mounted on top of upper housing and secured by the two rear card holder mounting screws.

- Card holder, if present, is positioned on top of spacer plates.

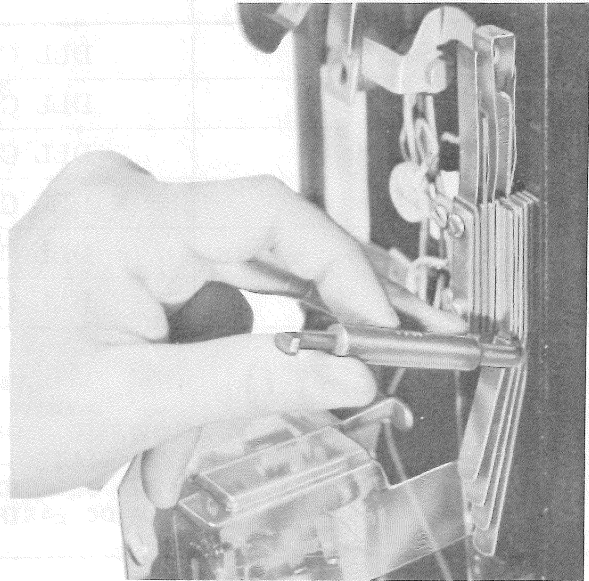
#### **Noise or Cutout**

**6.101** With upper housing locked in place and talking battery on line, there shall be no noise or cutouts in the talking circuit resulting from moving the upper housing up and down, from side to side, and forward and backward.

**6.102** If talking circuit is noisy or cutouts occur, proceed as follows:

- Clean housing contact springs.

- Use a 466A tool to adjust housing contact and equalizing springs to have approximately 1/4-inch follow (Fig. 50).



**Fig. 50—Adjustment of Housing Contact Springs**

**6.103** If noise or cutout is caused by shaking cord or handset, replace handset.

#### **F. Range Data and Coin Relay Operate Values**

**6.104** Refer to Table J for Dial Long Line requirements.

**6.105** Refer to Table K for loop ranges.

**6.106** Refer to Table L for old and new operate values.



*Newly repaired coin relays will differ in operate values from earlier relays (Fig. 51 and 52). These relays will be marked with an asterisk (\*) adjacent to the part No.*

#### **COIN FIRST (TWO-COIL COIN RELAY)**

**Caution:** Remove receiver or handset from switchhook before removing or reassembling upper housing from or to backplate of coin collector equipped for

TABLE J

**REQUIREMENTS FOR DIAL LONG LINE CIRCUITS ON COIN LINES  
(FOR LIMITATIONS OTHER THAN COIN CONTROL)  
(ASSUMES 300-OHM STATION SET RESISTANCE)**

TYPE OF CENTRAL OFFICE	REQUIREMENTS
Step-by-Step	DLL CKT Required on Loops Over 1050 ohms
Panel	DLL CKT Required on Loops Over 885 ohms
No. 1 Crossbar	DLL CKT Required on Loops Over 1200 ohms
No. 5 Crossbar	DLL CKT Required on Loops Over 1300 ohms
No. 1 ESS	DLL CKT Required on Loops Over 1300 ohms
No. 2 ESS	DLL CKT Required on Loops Over 1300 ohms

TABLE K

**MAXIMUM ALLOWABLE LOOP RANGES FOR CENTRAL OFFICE  
COIN SUPPLY VOLTAGES—COLLECT AND RETURN ONLY  
(MAXIMUM GROUND RESISTANCE 50 OHMS;  
MAXIMUM DC EARTH POTENTIAL  $\pm 3$  VOLTS)**

TYPE OF CENTRAL OFFICE	MINIMUM COIN VOLTAGE	LOOP RANGE WITH 48 MA. OP. RELAY	LOOP RANGE WITH 41 MA. OP. RELAY
SXS, Panel, No. 1 XBar	100 volts (100-120V)	1500 ohms	2200 ohms
SXS, Panel, No. 1 XBar	115 volts (115-120V)	2100 ohms	3000 ohms
No. 5 XBar, No. 1 ESS, No. 2 ESS	125 volts (125-135V)	2500 ohms	3400 ohms

*Note:* Loop Range = Conductor Loop Resistance (excluding coin telephone set resistance).

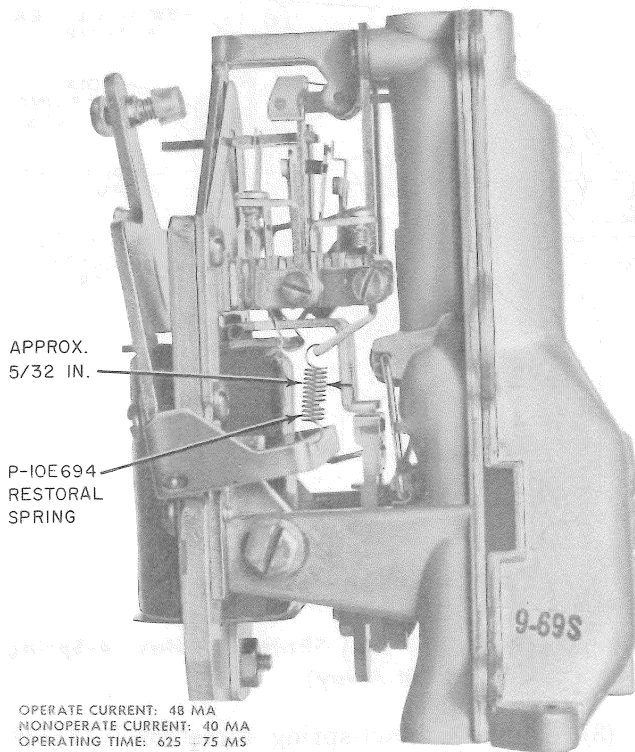
TABLE L

**MULTISLOT COIN COLLECTORS OPERATE VALUES OF COIN RELAYS**

MARKING ON RELAY	OPERATING TIME	OPERATE CURRENT	NON-OPERATE CURRENT	REMARKS
P-10E786	625 $\pm$ 75 millisec	48 milliamps	40 milliamps	Coil of restoral spring has a diameter of ap- proximately 5/32-inch (Fig. 51)
P-13E961	(Note 1)			
P-10E786*	450 $\pm$ 50 millisec	41 milliamps	30 milliamps	Coil of restoral spring has a diameter of ap- proximately 9/32-inch (Fig. 52)
P-13E961*	(Note 2)			

*Notes:*

- 1 — The timing interval of 625 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 6.
- 2 — The timing interval of 450 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 4.



**Fig. 51—Coin Relay Showing Old Operative Values**

*10-cent operation. This reduces possibility of damage to gate operating arm.*

#### G. Coin Relay and Hopper Tests

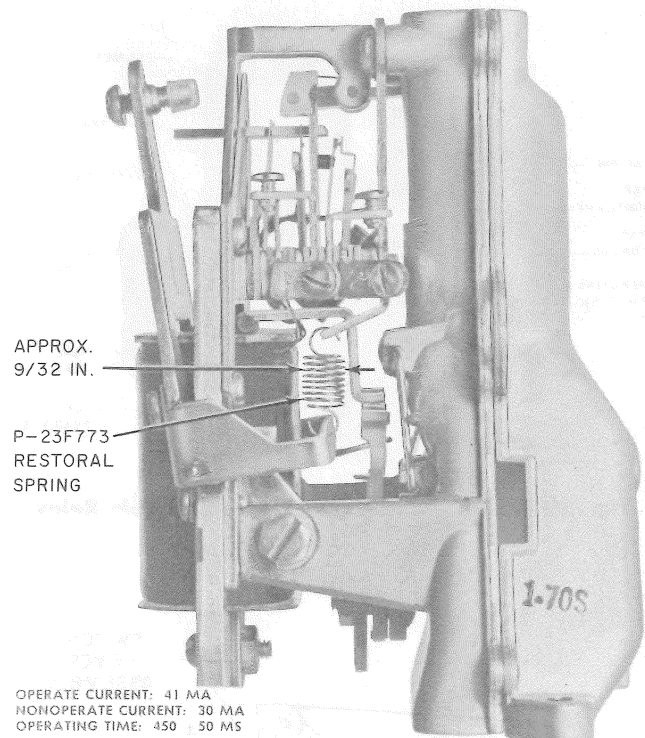
**6.107** Refer to Fig. 53 and 54 for component parts.

**6.108** Refer to Fig. 55 and 56 for spring arrangements.

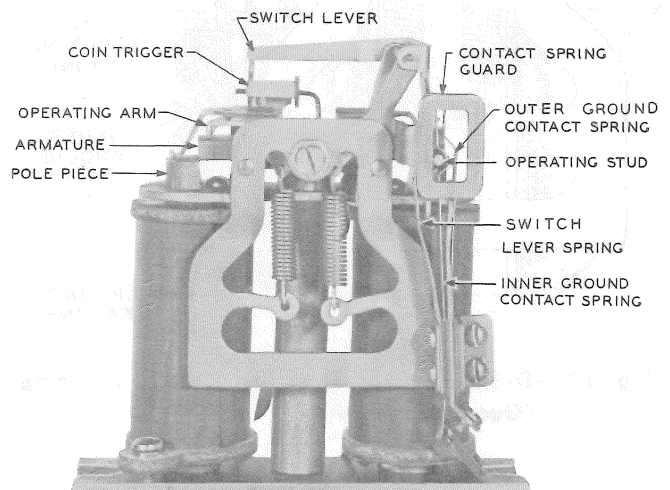
#### Ground Contact Springs, P-145749 and D-96590 Relays

**6.109** Check ground contact spring force for the P-145749 (2-spring) relay and D-96590 (3-spring) relay as follows:

- (1) With ground lead connected to coin collector, place required gram slot of 147A gauge (Fig. 57) on horizontal portion of switch lever (Fig. 58).
- (2) Connect hand test set across line terminals of coin collector, and trip coin trigger. Dial

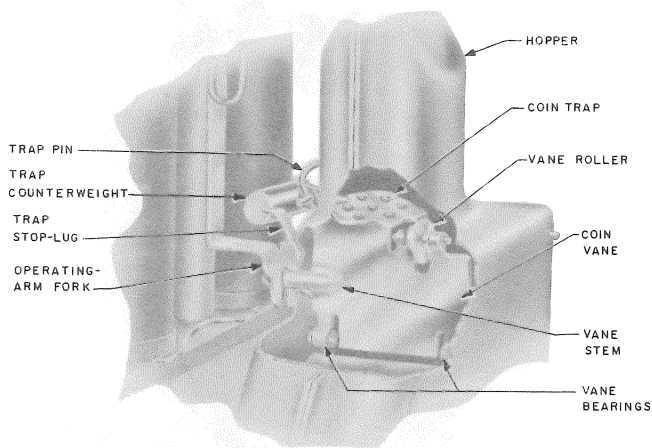


**Fig. 52—Coin Relay Showing New Operating Values**

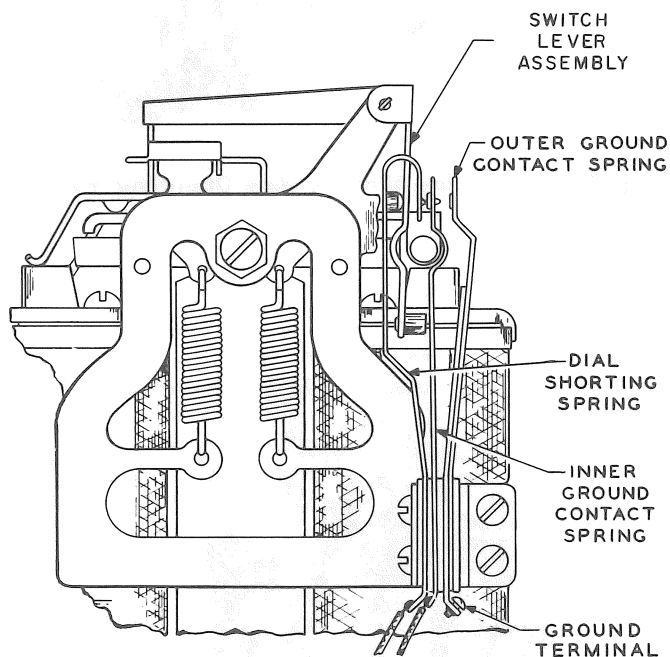


**Fig. 53—P-145749, Two-Coil Coin Relay**

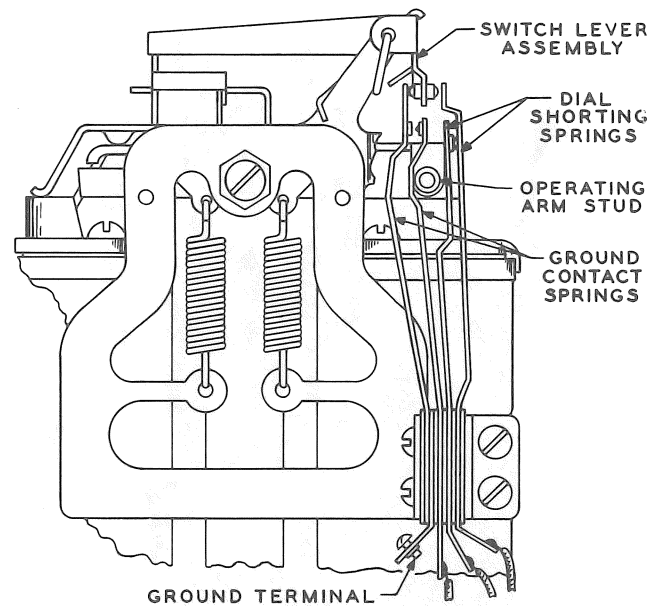
tone will be heard in dial areas, or operator will answer in manual areas. If not, proceed as follows:



**Fig. 54—Hopper and Rear of Two-Coil Coin Relay**



**Fig. 55—D-96590 Dial Shorting Relay, 3-Spring (Guard Cut Away)**



**Fig. 56—P-10C117 Dial Shorting Relay, 4-Spring (Guard Cut Away)**

- (3) Ground contact-spring force for P-145749 (2-spring) relays should be a minimum of 5 grams measured with the 147A gauge as shown in Fig. 58.
- (4) Ground contact-spring force for D-96590 (3-spring) relays should be a minimum of 3 grams measured with 147A gauge 3-gram slot. Contact requirements are as follows:
  - (a) If contacts are open, force is less than minimum required. Replace relay or coin collector having a single coil relay.
  - (b) If contacts touch but test open, burnish contacts with 265C tool.
  - (c) If dial tone is not heard after burnishing contacts, short-circuit ground contact springs.
  - (d) If dial tone is heard when contact springs are shorted, replace relay or coin collector having a single coil relay.
  - (e) If dial tone is not heard when contact springs are shorted, test for open relay coil or trouble in station ground or line circuit.



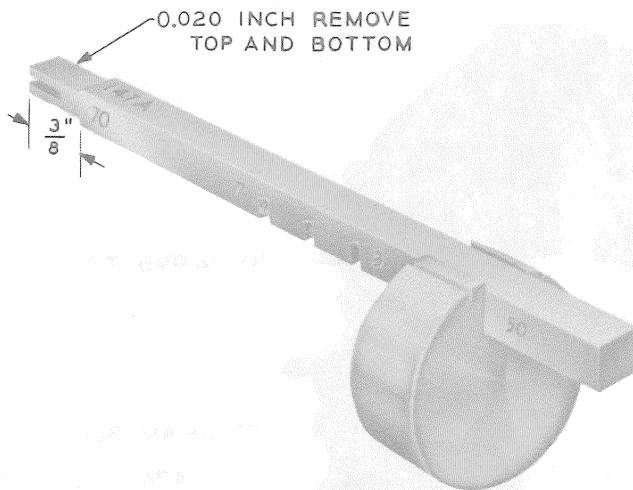


Fig. 57—147A Gauge

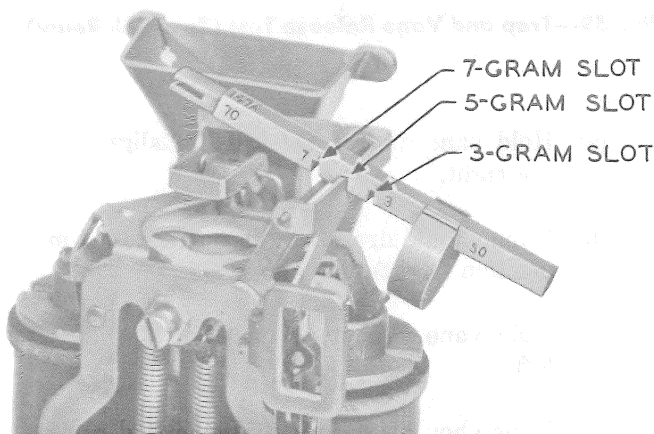


Fig. 58—Gauge for Ground Contact Spring Force

#### Ground Contact Springs, P-10C117 Relay

**6.110** Check ground contact-spring force for the P-10C117 (4-spring) relay as follows:

- (1) Ground contacts shall have perceptible follow. Observe while raising switch lever slowly by hand from its tripped position.

**Note:** Do not use 147A gauge for checking ground contact-spring force on this relay.

- (2) Connect hand test set across line terminals of coin collector, and trip coin trigger. Dial tone will be heard in dial areas, or operator will answer in manual areas. If not, proceed as follows:

- (a) If contacts have perceptible follow but test open, burnish contacts with 265C tool.
- (b) After burnishing contacts, if dial tone is not heard, short-circuit ground contact springs.
- (c) If dial tone is heard when contact springs are shorted, replace relay.
- (d) If dial tone is not heard when contact springs are shorted, test for open relay coil or trouble in station ground or line circuit.

#### Dial Shorting Contact Springs

**6.111** With coin trigger and operating arm in normal unoperated positions, dial shorting contact springs (Fig. 55 and 56) should have perceptible follow. With coin trigger tripped, they should be open; judge visually.

**6.112** Dial shorting contacts should shunt dial pulsing contacts when coin trigger is in normal position. With ground lead connected, check as follows:

- (1) Provide ground on line by strapping around ground contact springs:
  - On D-96590 (3-spring) relays, strap ground terminal to **tip** side of line.
  - On P-10C117 (4-spring) relays, strap ground terminal to **right** coil terminal.
- (2) Make sure that coin trigger is **not** tripped.
- (3) Place upper housing on coin collector and wait for dial tone.
- (4) When dial tone is heard, dial any digit except "0" or "1". Dial tone should not be broken.

- (5) If dial tone is not broken, **remove strap** and proceed with remaining tests.
- (6) If dial tone is broken, dial shorting contacts are not shunting dial. Clean contacts and recheck follow of dial shorting springs. Check wiring and transfer spring contacts for continuity.

### Trap and Vane Release Test

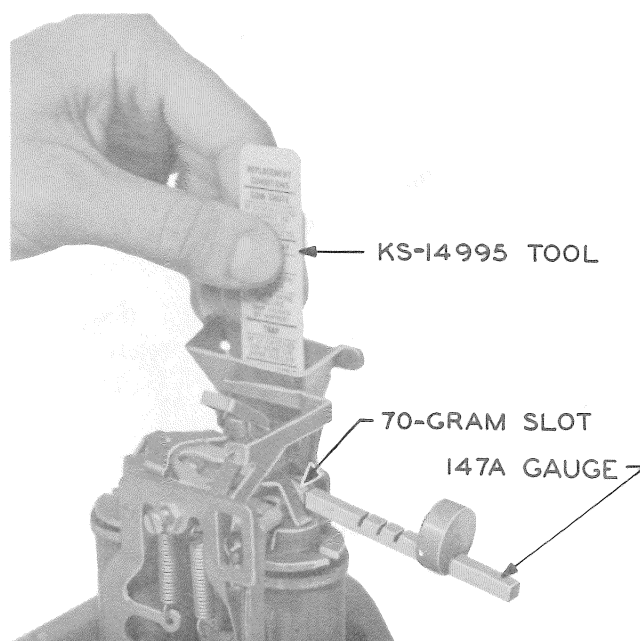
**Note:** At manual stations, disconnect ground from coin relay while making this test.

**6.113** Trap, vane, and relay should restore fully to their unoperated positions against a torque of 70 gram-inches applied to relay operating arm with a 147A gauge (Fig. 59). Test as follows:

- (1) Remove shield from relay.
- (2) Apply slot 70 of 147A gauge to right rear horizontal portion of relay operating arm. Make sure that enclosed end of slot is against edge of operating arm and that weight on gauge is positioned up, as shown in Fig. 59.
- (3) Press down on 147A gauge to operate relay and vane to limits of their travel.
- (4) Insert KS-14995, List 3 trap and vane test tool into throat of hopper to operate trap to the limit of its travel. Hold in place as shown in Fig. 59.
- (5) Release pressure on 147A gauge.
- (6) Slowly withdraw KS-14995 tool. Take at least 5 seconds.
- (7) Be sure that vane and relay return to their unoperated positions.
- (8) Make test three times with gauge on right (collect) side and three times on left (refund) side.

**6.114** If mechanism fails, remove relay and proceed as follows:

- (1) If hopper is equipped with a brass coin vane, replace coin collector; otherwise, check vane for binding on its bearing as follows:



**Fig. 59—Trap and Vane Release Test (Two-Coil Relay)**

- (a) Hold vane almost vertical but slightly to the right.
  - (b) Vane should drop to fully operated refund position (right) when released.
  - (c) Hold vane almost vertical but slightly to left.
  - (d) Vane should drop to fully operated collect position (left) when released.
  - (e) If vane binds on its bearings, replace coin collector.
- (2) Check vane for binding on hopper as follows:
- (a) Holding vane stem as far forward as possible, move vane over its full travel in each direction three times. Make sure that it does not scrape on front of hopper.
  - (b) Push vane to rear of hopper and move vane over its full travel in each direction. Make sure that it does not scrape on back of hopper. Do not push hard enough to distort hopper.

- (c) If vane binds on hopper, replace coin collector.
- (3) Check trap for catching on vane or on vane roller as follows:
  - (a) Hold vane in fully operated collect position (to the left) using left hand.
  - (b) With the right hand, lift trap counterweight to its fully operated position.
  - (c) Move vane slowly until it engages trap.
  - (d) Continue moving vane toward vertical position while gently restraining trap. Vane should move smoothly to vertical position.
  - (e) Repeat test on refund side (to the right), reversing use of hands. If trap catches on vane or vane roller, replace trap as covered in 6.123 and repeat test. If replacement trap still catches, replace coin collector.
- (4) Check clearance between trap and vane roller as follows:
  - (a) With trap in unoperated position, place a finger lightly on counterweight.
  - (b) Move vane to vertical position. If vane rubs on trap, adjust trap stop lug so that trap will just clear vane (Fig. 54).
  - (c) With vane in vertical position, lift trap counterweight. Trap should not move more than a few degrees before touching vane roller. Adjust by bending stop lug (Fig. 54).
- (5) Check operating arm fork and vane stem for roughness. Clean and lubricate as covered in 6.117. Also check operating stud. If stud is rough or roller type, replace relay.
- (6) Remount coin relay as covered in 6.118 and repeat trap and vane release test. If mechanism fails, replace relay.

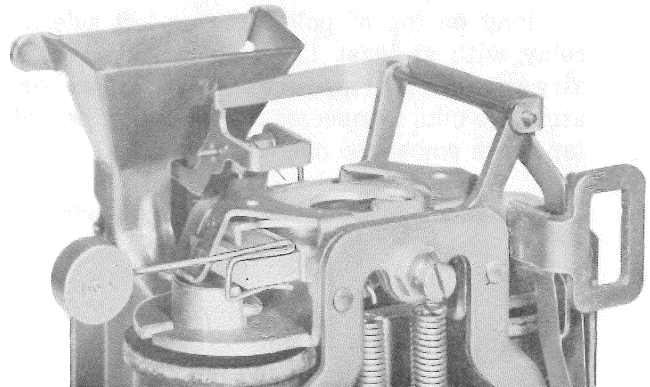
#### Bias Margin Test

**Note:** Make bias margin test only if relay fails to operate or operates in wrong direction.

**6.115** Relay should operate against torque of a 146A gauge attached to armature in both collect and refund directions when appropriate central office coin battery is applied. Test as follows:

- (1) To test in collect direction, place a 146A gauge on left side of armature (see Fig. 60).
- (2) Connect hand test set across line terminals.
- (3) Trip coin trigger (see 6.116).
- (4) Obtain collect current by any available local arrangement. Relay should operate to collect (lifting gauge) and trigger should restore. Make test three times (see 6.116).
- (5) To test in refund direction, place 146A gauge on right side of armature.
- (6) Trip coin trigger.
- (7) Obtain refund current. Relay should operate to refund (lifting gauge) and trigger should restore. Make test three times.
- (8) If relay fails to operate in the correct direction or if trigger fails to restore, check for and remove magnetic particles or replace relay.

**Note:** Make sure that line and ground are satisfactory and that coin battery is being applied.



**Fig. 60—Bias Margin Test**



**6.116** When coin trigger is tripped, ground contact springs should close and remain closed without break while armature is moved from its normal to its fully operated position. It is immaterial at what point on return stroke contacts open.

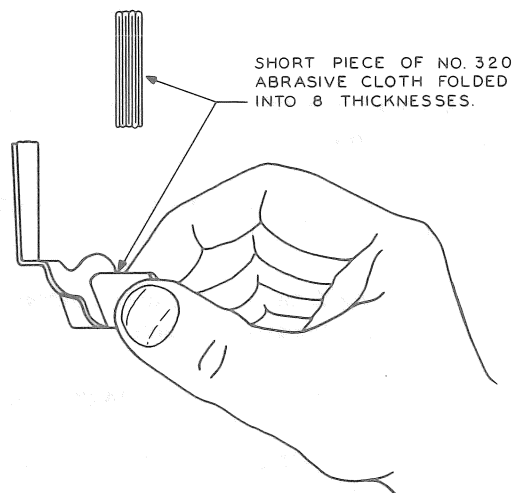
#### Cleaning Coin Relay

**6.117** If relay has been removed for any reason, proceed as follows:

- (1) Clean and lubricate fork and vane stem as follows:
  - (a) Surfaces of fork slot should be smooth. If bearing surfaces of fork are so rough that they cannot readily be made smooth, replace relay; otherwise, smooth rough spots using No. 320 or finer abrasive cloth folded as shown in Fig. 61.
  - (b) Clean with KS-2423 cleaning cloth moistened with KS-7860 petroleum spirits.

**THINK** *KS-7860 petroleum spirits is flammable. Use safety precautions when handling.*

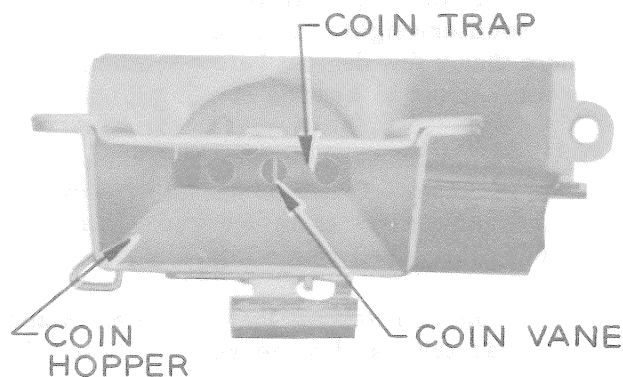
- (c) Apply graphite from grade 2B or softer lead pencil to bearing surfaces of fork slot. Rub lead on these surfaces to deposit as continuous a coating as possible.
- (2) Remove magnetic particles from adjacent surfaces of armature, pole pieces, and top of magnet with rubber tape or equivalent. To remove particles:
    - (a) Place a piece of rubber tape about 1 inch long on top of pole piece on left side of relay with at least 1/4-inch extending into airgap under armature. Press down on armature until it squeezes rubber tape. Discard tape with embedded magnetic particles.
    - (b) Repeat operation on right side with a new piece of rubber tape.
    - (c) Use tape folded over orange stick to remove particles from top of magnet.



**Fig. 61—Polishing of Fork Slot**

#### Replacing Coin Relay

**6.118** When mounting relay, center it so that with operating arm in its normal vertical position, fork slot engages vane stem and holds coin vane in a vertical position. Full thickness of coin vane is visible in the center hole of coin trap (Fig. 62). If relay cannot be centered, replace relay. If replacing relay cannot be centered, replace coin collector.



**Fig. 62—Position of Vane When Relay is Centered**

**6.119** Coin trigger should not touch upper end of slot in hopper or bind on sides of slot at any point of travel.

**6.120** Place relay as close as possible to hopper. There should be at least 1-1/16 inch clearance between fork and hopper, between vane stem and relay, and between trap counterweight and relay.

#### Replacing Coin Trap

**6.121** Relay must be removed to replace coin trap.

**6.122** Coin traps in later style hoppers may be replaced through front of hopper without removing coin shield.

**6.123** To replace coin trap in *earlier* style hoppers:

- (1) Remove coin return shield, if present, by inserting blade of a cabinet screwdriver in loop of pin. Twist screwdriver sufficiently to release end of pin from hole in hopper. Slowly pull shield and pin out together.
- (2) Move vane to the right.
- (3) Fasten a piece of string or wire to trap counterweight.
- (4) Remove trap pin by lifting right end of loop and sliding pin to the left.
- (5) Push trap into hopper and allow it to drop into coin return.
- (6) Fasten string or wire to new trap and pull trap up to slot in front of hopper.
- (7) Position new trap with bearing lugs uppermost and assemble trap pin.
- (8) Recheck clearance between trap and vane roller.

#### Replacing Coin Shield

**Note:** Coin shield is not required on coin collector equipped with pull bucket return chute.

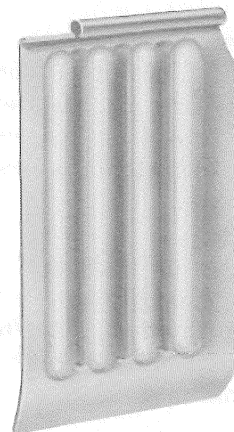
**6.124** If coins stick due to damaged or distorted coin shield, or if a bent shield pin causes shield to stick, remove shield pin and shield. Replace as follows:

- (1) Place P-247411 pin through tubular bearing at top of P-296792 shield. Curved-in portion on bottom of shield is toward hopper when loop of pin is to be the front (see Fig. 63).
- (2) Hold loop of pin with long nose pliers or fingers and place coin shield pin in hole in rear of hopper.
- (3) Hold shield in place with fingers and secure end of loop in front hole of hopper with long nose pliers.
- (4) Adjust loop so that pin does not come out when play is taken up in either direction.
- (5) Check operation of shield.

#### H. Coin Relay Shield

**6.125** The coin relay must be protected by a shield. The P-16A336 shield replaces the P-349486 (MD) and KS-7994 (MD) shields and should be used for all replacements.

**6.126** On coin collectors equipped with a D-95365 contact device, use P-16A336 shield. This differs from the P-349486 shield in that the lower left corner is cut away so as not to interfere with contact device.



**Fig. 63—P-296792 Coin Shield**

## I. Final Tests

### Coin Chute Operation and Refund Test

**6.127** To ensure that coin chute and coin return paths are clear and that station and coin relay are operating satisfactorily, make final test as follows:

- (1) Place coin relay shield on coin relay.
- (2) With upper housing locked in place and handset off-hook, deposit nickel. Nickel shall be held at holding latch. Lower switchhook slowly. Coin shall drop into coin return. Make test five times.
- (3) If coin collector is equipped with washer reject and coin release mechanism, test with handset off-hook. Deposit nickel. Nickel shall be held at holding latch. Operate pushbutton slowly. Nickel shall be released by gate and drop into coin return. Make test five times.
- (4) With handset off-hook, deposit nickel. Nickel shall be held at holding latch. Deposit second nickel. Second nickel shall release first nickel and permit both coins to pass through coin chute, strike gong, and trip trigger as they drop into hopper. Dial tone shall be heard at dial stations, or operator shall answer at manual stations. Deposit third nickel. Third nickel shall pass through coin chute, strike gong, and reach trap in coin hopper.
- (5) At dial stations, when dial tone is heard, dial any digit except "0" or "1" to break dial tone; then hang up handset. Coins shall drop into coin return on hang-up. At manual stations, when operator answers, request that coins be returned.
- (6) With handset on-hook, deposit dime. Dime shall pass through coin chute, strike gong twice, and trip trigger. Dial tone or manual operator shall be heard after handset is removed from switchhook.
- (7) With handset off-hook, deposit dime. Dime shall pass through coin chute, strike gong twice, and trip trigger bringing in dial tone or manual operator.

(8) With handset on-hook, deposit quarter. quarter shall be stopped by the open gate. Remove handset from switchhook. Gate will close and quarter will release and strike gong. Dial tone or manual operator should be heard.

(9) With handset off-hook, deposit quarter. Quarter shall pass through coin chute, strike gong, and trip trigger bringing in dial tone or manual operator.

(10) If cutover clip is used for 5-cent operation, initial nickel deposited shall not be held at holding latch. All other tests are the same as those described (see Fig. 26).

### Coin Signal Test

**6.128** Notify operator that tests for coin signals are about to be made and that coins are to be returned after deposit. Deposit nickel, dime, and quarter. If operator does not identify signals correctly, inspect for trouble at station. Correct as specified under coin chute alignment in the section on general maintenance of coin collectors.

### Extended Range

**6.129** Coin collectors used with a subscriber set which extends the coin relay range should meet all maintenance requirements listed. Check operation and adjustment of the *S36* relay housed in the subscriber set as covered in the section on subscriber set maintenance. If relay is defective, replace subscriber set with new subscriber set or replace coin collector with a single slot coin telephone set.

### POSTPAY

**Caution:** Remove receiver or handset from switchhook before removing or reassembling upper housing from or to backplate of coin collector equipped for 10-cent operation. This reduces possibility of damage to gate operating arm.

## J. Dial Postpay Coin Collectors (CDO)

**6.130** If a coin is found stuck between trap and hopper, release coin and proceed with tests and adjustments. If repeated trouble due to stuck coins are experienced, coin collector shall be replaced.

**Mechanism Unit Assembly**

**6.131** Trap shall restore freely to normal position when released slowly from fully open position. If it does not, coin collector shall be replaced.

**6.132** With trap in normal position, hopper contacts shall be made.

**6.133** With trap fully operated position, hopper contacts shall be open.

**6.134** The 31A varistor or 446F diode and 146A resistor are mounted as shown in Fig. 14.

**6.135** The contact spring terminal, to which the 31A varistor terminal marked TIP (+) is connected, is always wired so as to be on tip side of line. Pole 446F diode as shown in Fig. 14.

**Hopper Contact Operation**

**6.136** With upper housing removed and with handset or receiver off-hook, connect hand test set across line in series with hopper contacts as follows:

- At common battery stations connect hand test set between hopper contact spring terminal which is connected to Y housing contact spring and terminal R on transfer spring pile-up or on wood terminal strip.
- At local battery stations connect hand test set between hopper contact spring terminal which is connected to Y housing contact spring, and terminal BK (or BKX when used) on transfer spring pile-up or on wood terminal strip.

**6.137** Dial a local number (not a free call line). If steady deposit coin tone is heard, proceed as in 6.138. If deposit coin tone is heard only momentarily, followed by a short delay and then regular dial tone, check that hopper contacts are properly closed.

- If contacts touch but do not make, burnish with 265C tool.
- If contacts do not touch, replace coin collector.

If no fault is found in hopper contact circuit, trouble may be in central office equipment.

**Note:** If hopper contacts are open with trap in its normal position, central office equipment will disconnect on calls to nonfree call lines, after which dial tone will be received.

**6.138** When steady deposit coin tone is heard, operate trap manually to complete connection. If connection is not completed, check for the following:

- Reversed or defective 31A varistor or 446F diode.
- Line reversed.
- Open resistor (63CH or 146A).

If no fault is found at station, trouble may be in line or central office equipment.

**Note:** Completion of circuit by manual operation of trap may require several attempts because of critical adjustment of central office equipment. Trap must be fully operated and quickly released. If trap is not fully operated, circuit may not cut through. If trap is not released quickly, central office equipment may disconnect, necessitating redialing.

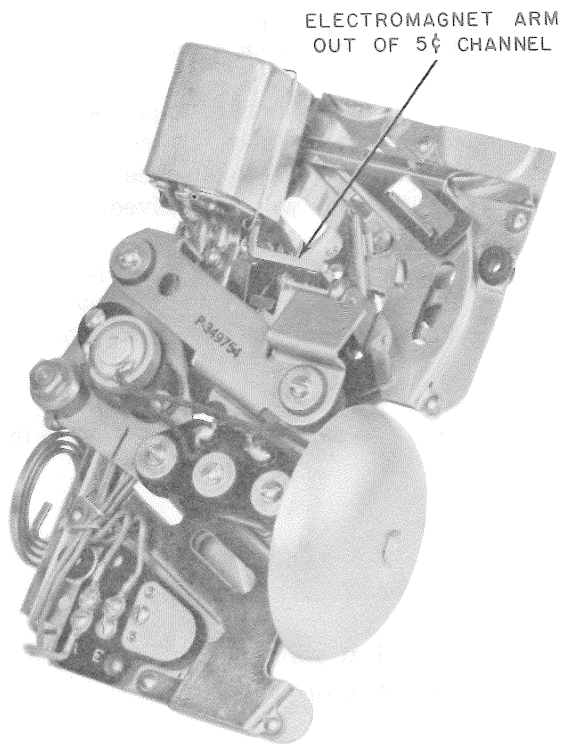
**Varistor and Diode Effectiveness**

**6.139** In operating trap manually on a local call (6.138), a click will be heard in receiver. If click is as loud on a call to operator as it is on a local call, 31A varistor or 446F diode is defective and should be replaced.

**Coin Chute Operation and Refund Tests**

**6.140** Position electromagnet arm so that end is out of 5-cent channel (see Fig. 64). Insert 529A tool in top of coin hopper to retain test coins.

**6.141** With upper housing locked in place and with receiver or handset on-hook deposit a nickel. Coin shall drop into coin return. Test shall be made five times and nickel shall return each time.



**Fig. 64—Dial Postpay Gong Signal and Chute Assembly**

**6.142** With receiver or handset off-hook dial operator. When operator answers, deposit a nickel. Coin shall pass through chute, striking gong, and shall reach 529A tool in hopper.

- If test is met, electromagnet and line wires are connected correctly.
- If nickel falls into coin return, check switch hook operation and gate operating arm adjustment.
- If nickel does not pass through chute as indicated by not striking gong, deposit another nickel. If both coins pass through chute and strike gong, it indicates that first nickel stopped in chute at first latch. Check operation and wiring of electromagnet in accordance with connection diagram in appropriate section. If nickel still fails to reach 529A tool, replace coin chute and repeat tests.

**Note:** When dial tone is received, electromagnet arm is positioned in 5-cent channel. On calls to or through an operator, electromagnet arm remains in 5-cent channel. This allows a single nickel to pass through coin chute.

**6.143** If test in 6.142 is met, request operator to call back as in a delayed call. Answer call and repeat test with a nickel. Have operator make this test over local and toll connectors if both are available. If test in 6.142 is met but test over local and toll connectors is not met, trouble may be in line or central office equipment.

#### **Coin Signal Test**

**6.144** Use a 529A tool. Call and inform the operator that you are about to test coin signals. Deposit a nickel, dime, and quarter. If operator does not identify signals correctly, inspect for trouble at station and correct as specified in 6.33 through 6.35.

#### **K. Manual Postpay Coin Collectors**

##### **Coin Hopper**

**6.145** The coin hopper in these coin collectors is a simple channel to guide coins from coin chute to coin receptacle. The only coins returned in this service are improper deposits. If sticking of coins occurs in coin hoppers not provided with clear-out holes, coin collector shall be replaced.

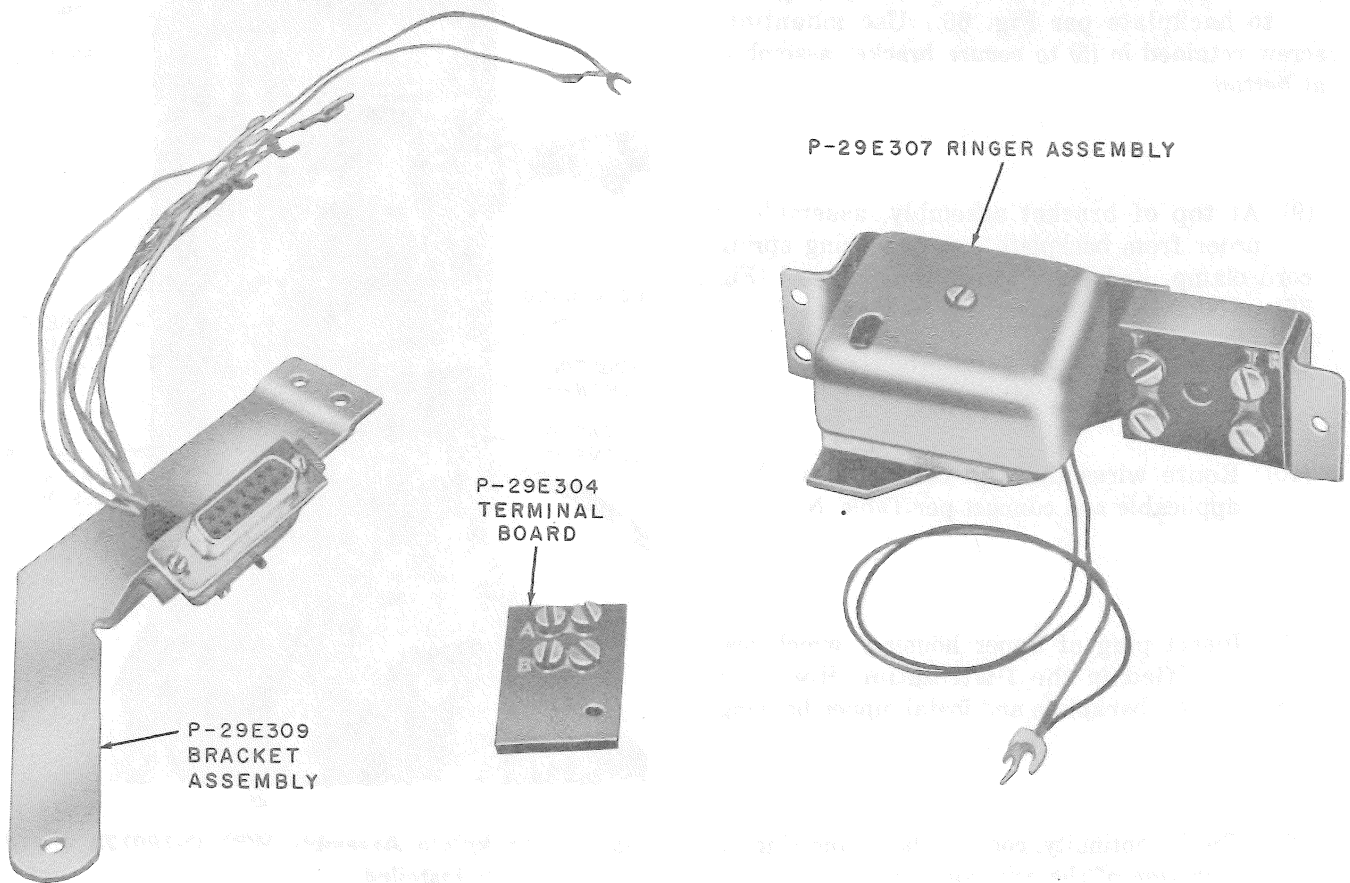
#### **Coin Signal Test**

**6.146** Make test as in 6.144.

#### **7. MODIFICATION—TO ADD D-180120 KIT OF PARTS (RINGER ASSEMBLY) TO BACKPLATE ASSEMBLY**

**7.01** This modification can be performed on the following coin collectors:

191GNT	196 HNT
191 HNT	197 GNT
195 GNT	197 HNT
195 HNT	233G
	233H
196 GNT	234G



**Fig. 65—D-180120 Kit For Modification of Backplate Assembly**



*Only the backplate assembly is to be modified in the field. The upper housings will be modified in the distributing houses with D-180121 kit to add network to upper housing. The modified upper housings will be identified by a red star after the code number.*

**7.02** The D-180120 kit to be installed in the field consists of P-29E307 ringer assembly, P-29E309 bracket assembly, and P-29E304 terminal board (Fig. 65).

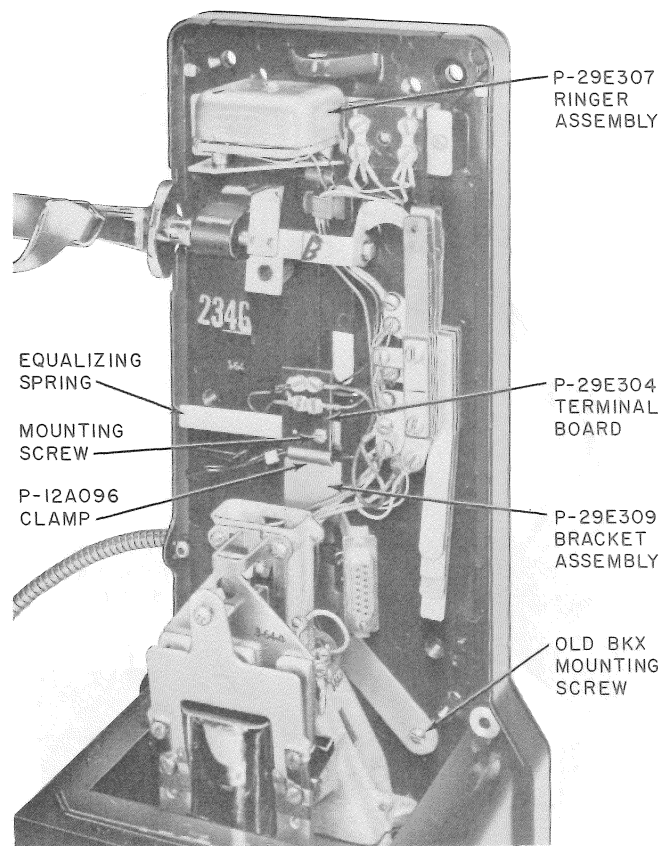
**7.03** Install kit as follows:

(1) Disconnect wires per Table M.

- (2) Remove subscriber set.
- (3) Disconnect (BK) wire from between BBX of switchhook and BB of transfer contacts.
- (4) Remove and discard terminal plate assembly at top of backplate assembly. Retain hardware.
- (5) Install P-29E307 ringer assembly (Fig. 65) in same position as terminal plate assembly was located using the retained hardware (Fig. 66).
- (6) Remove and discard BKX transfer spring at right of coin relay. Retain mounting screw.
- (7) Remove and retain equalizing spring, cord clamp, and associated fastener.



- (8) Install P-29E309 bracket assembly (Fig. 65) to backplate per Fig. 66. Use mounting screw retained in (5) to secure bracket assembly at bottom.
- (9) At top of bracket assembly, assemble in order from backplate out, equalizing spring, cord clamp, and P-29E304 terminal board (Fig. 65). Secure with hardware retained in (6) (see Fig. 66).
- (10) Route wires through cord guides where applicable and connect per Table N.
- (11) Insert plug of upper housing, which was modified in the Distributing House, in connector on backplate and install upper housing.
- (12) Check continuity, coin handling, and ringing operation of the coin collector.



**Fig. 66—Backplate Assembly With D-180120 Kit of Parts Installed**

**TABLE M**  
**DISCONNECTED WIRES**  
**(D-180120 KIT)**

WIRE COLOR	DISCONNECT FROM	OTHER END CONNECTED TO
G	L on term. block	Tip
G		Subset
R	Y on switchhook	Ring
R		Subset
Y	G on coin relay	Ground
R	TR on term. block	Subset
BK		Handset
W		
G	W on transfer contacts	Subset
Y	R on transfer contacts	
R	T on term. block	Handset
BK		Subset
Y (685A, Subset only)		3 of Coin relay
Y (685B, Subset only)		
	3 on coin relay	Subset

**TABLE N**  
**CONNECTED WIRES**  
**(D-180120 KIT)**

WIRE COLOR	CONNECT TO	OTHER END CONNECTED TO
W	TR on term. block	Handset
BK		Connector
W		
R	T on term. block	
Y*		Connector
R		Connector
Y	SL on switchhook	
G	BXX on switchhook	
V-S (MD) or BK	2 on coin relay	
V-BR (MD) or BL	R on switchhook	
O		Ringer
R	Connector	
V		
BK	A on term. board	Tip
G	R on switchhook	Ring
R	Y on switchhook	Ground
Y	G on coin relay	Y on Switchhook†
BK	A on term. board†	

\* If a 685B subset was disconnected per Table J, (Y) wire will not exist. Use a (Y) strap.

† Use BK strap disconnected in 9.03 (3).





**REFERENCE**  
**COIN COLLECTORS**  
**235-, 236-, AND 1235-TYPE**

**1. GENERAL**

**1.001** This addendum supplements Section 506-310-101, Issue 1.

**1.002** This addendum is issued to add information on:

- G3AJ handset
- KS-21468, List 1 tone pick-up coupler

**1. GENERAL**

The following change adds to Part 1 of this section:

- (a) 1.07—added

**1.07** The G3R or G3AE handset, presently used on these coin collectors, is being replaced with G3AJ-coded handset which has the following features:

(1) It is equipped with an LB-type receiver unit and special field coil adapter in the handset which provides a uniform magnetic field of use to hard-of-hearing customers having inductive pick-up-type hearing aids.

(2) The G3AJ handset can be readily identified by a Bell System blue-colored grommet around the armored cord at the transmitter end of the handle.

(3) Transmitter and receiver caps are bonded to the handle to discourage removal.

**4. MAINTENANCE**

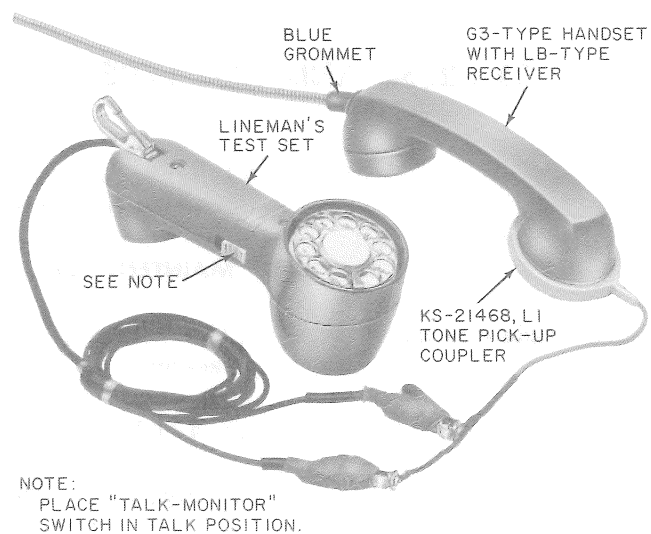
The following change adds to Part 4 of this section:

- (a) 4.11.1—added
- (b) Fig. 17.1—added

**Testing The LB Receiver**

**4.11.1** Test the G3AJ handset to determine if the field coil adapter in the handset is working correctly, as follows:

- (a) Place a KS-21468, List 1 tone pick-up coupler (Fig. 17.1) on the receiver cap of handset.
- (b) Clip a lineman's test set to the two tone coupler terminals.
- (c) Place the TALK-MONITOR switch in the TALK position.
- (d) Dial the 1000 Hz test number from the coin telephone set, then listen in the test set receiver for the 1000 Hz tone.
- (e) If the tone is not heard, the field coil adapter is defective and the coin phone handset should be replaced.



**Fig. 17.1—KS-21468, List 1 Tone Pick-up Coupler**

REFERENCE  
COIN COLLECTORS  
235-, 236-, AND 1235-TYPE

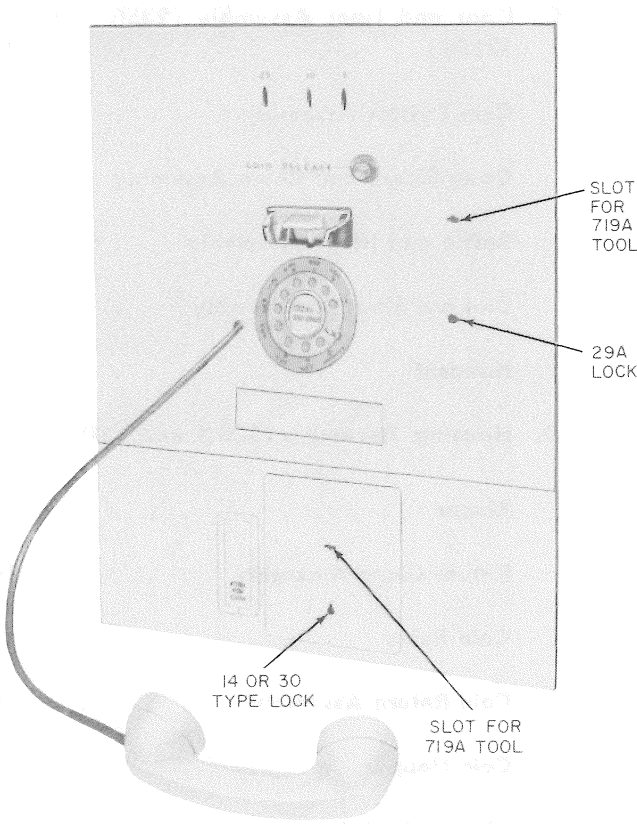


Fig. 1—235G Coin Collector

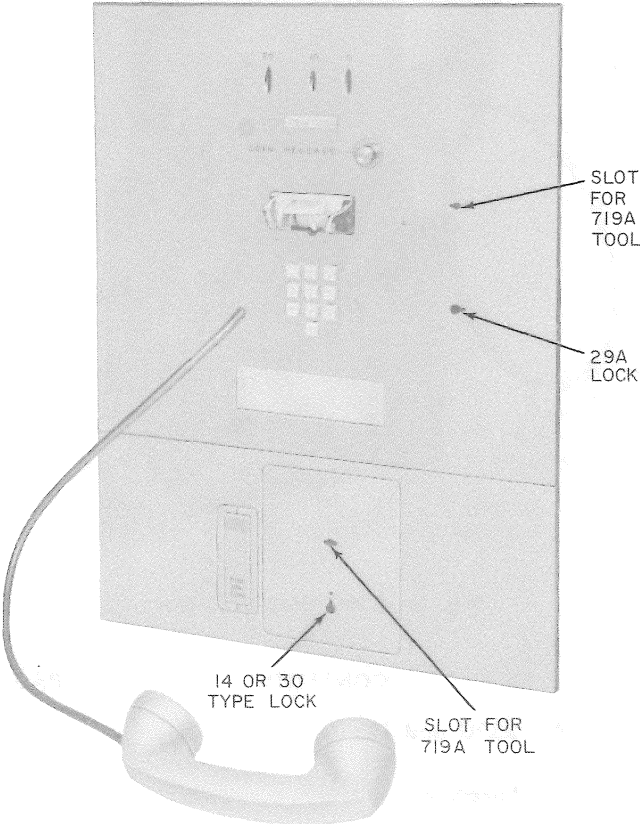


Fig. 2—1235G Coin Collector

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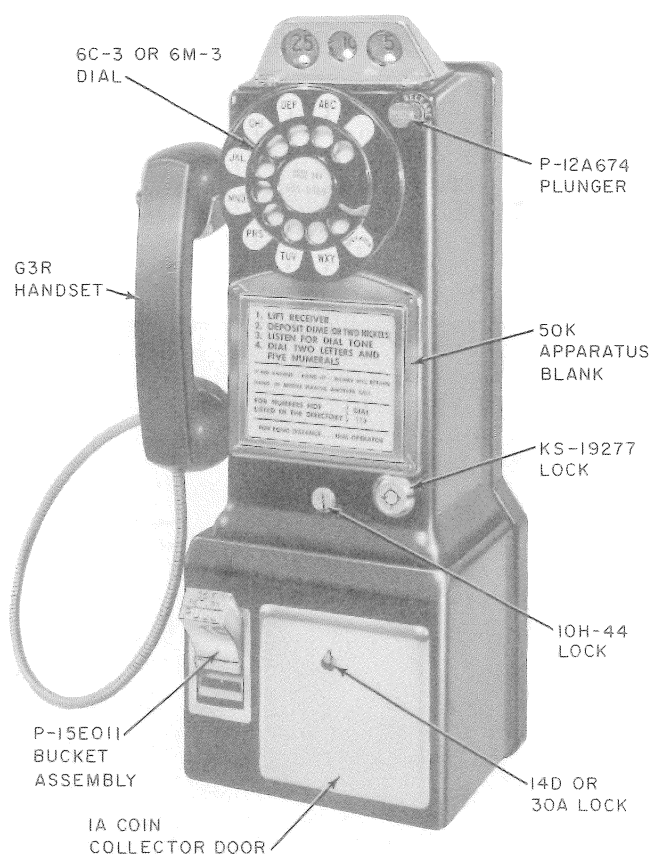


Fig. 3—236G Coin Collector

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## 1. GENERAL

1.01 Information in this section was formerly contained in the following sections which are hereby canceled:

● 506-321-100

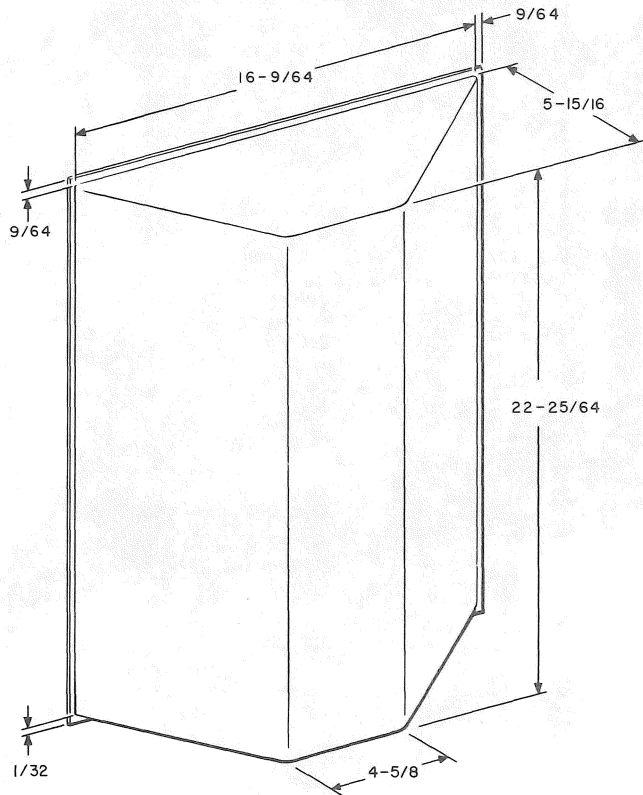
● 506-322-100

1.02 The 235G(MD) and 1235G(MD) coin collectors (Fig. 1 and 2) are stainless steel, multislot, panel phones. They are similar except the 235G has a rotary dial; the 1235G has a 10-button TOUCH-TONE® dial.

1.03 The 236G (MD) coin collector (Fig. 3) is a modified 200-type coin collector, having the

transmission network and ringer included in the upper housing and backplate which eliminates the need for a subscriber set.

**1.04** Overall dimensions of the panel phones are shown in Fig. 4.



NOTES:  
1. ALL DIMENSIONS SHOWN ARE IN INCHES.  
2. THE SWITCHHOOK AND HANDSET EXTEND 2-3/4 INCHES IN FRONT OF THE FACEPLATE.

TPA 519423

**Fig. 4—Rear View of 235G or 1235G Showing Dimensions**

**1.05** Overall dimensions of the 236G are:

- Width—9-13/64 inches
- Height—18-21/64 inches
- Depth—6-23/32 inches

**1.06** This section does not include information on Dial Tone First service.

## 2. IDENTIFICATION

### A. 235G and 1235G

#### Ordering Guide

- Collector, Coin, 235G-67A
- Collector, Coin, 1235G-67A

#### 2.01 *Replaceable Components for 235G (Fig. 5)*

- P-44E392 door and housing assembly, consisting of:

P-27E804 door and liner assembly

P-27E855 housing assembly

4A-67 cash compartment door

- P-84D152 rotary dial and housing assembly, consisting of:

8M-52 dial

P-87B052 number plate assembly

- P-44E390 coin twister frame assembly

- P-27E847 coin twister (top section)

- G3-52 handset

- C4A ringer

- 4010B network

- P-20A125 gong signal and chute assembly

- P-11E964 coin relay and hopper assembly

- P-27E835 return chute assembly

- P-15E491 coin return assembly

- 1D coin receptacle rail

#### 2.02 *Replaceable Components for 1235G (Fig. 5)*

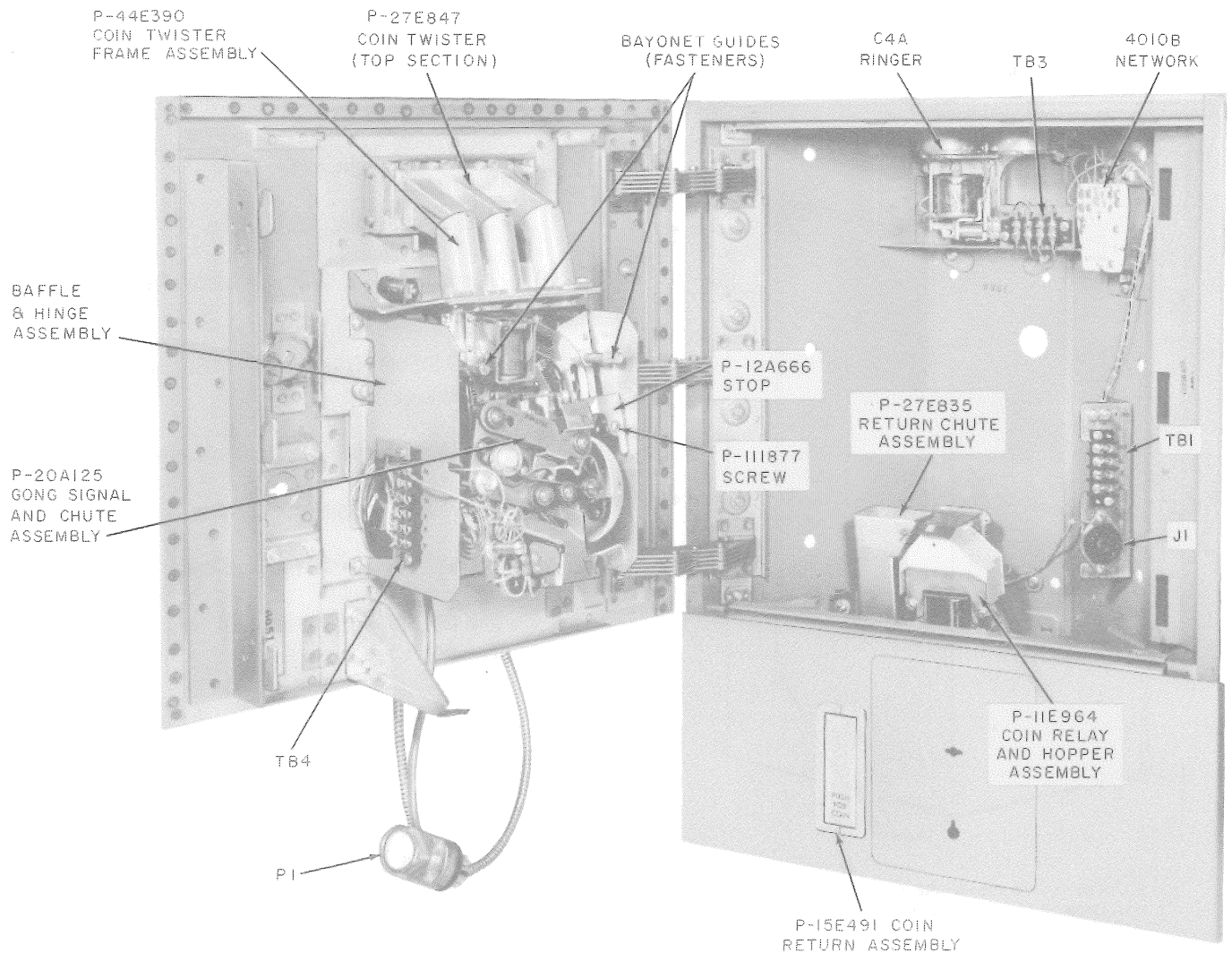


Fig. 5—235G or 1235G Coin Collectors—Interior View

- P-44E391 door and housing assembly, consisting of:

P-27E803 door and liner assembly

P-27E855 housing assembly

4A-67 cash compartment door

- P-27E820 TOUCH-TONE dial and housing assembly consisting of:

25E3 dial

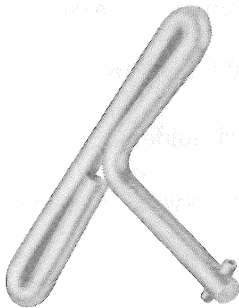
All other components same as for 235G

## 2.03 Associated Apparatus for 235G or 1235G (order separately)

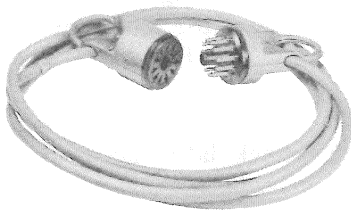
- 1B coin receptacle
- 1D or 1E coin receptacle cover
- 29A lock (door and liner assembly)\*
- 14- or 30-type lock (cash compartment)\*

- 719A tool (Fig. 6)
- P11C test cord (Fig. 7) (used for testing with door and liner assembly open)
- 127A-67 or 127B-67 cover (Fig. 8) (for use over the coin telephone set in installations not flush mounted)

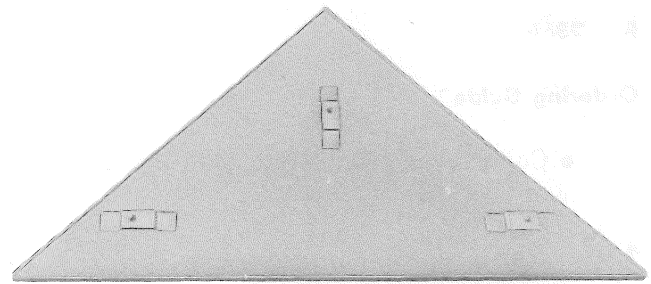
\* Order must specify authorized recipient to whom keys are to be sent.



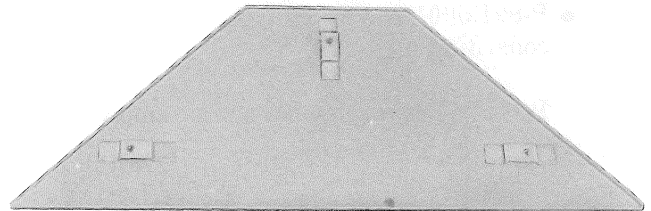
**Fig. 6—719A Tool**



**Fig. 7—P11C Test Cord**



**127A-BOTTOM SIDE**



**127B-BOTTOM SIDE**

**Fig. 8—127A and 127B Covers**

#### **Design Features**

- 2.04** All parts are contained in a high-security steel housing which has the following features:
- Door and liner assembly has three locking points actuated by a 719A tool.
  - Door and liner assembly is secured by 29A lock and 719A tool.
  - Cash compartment door has five locking points; three are actuated by a 719A tool and two are stationary.
  - Cash compartment door is secured by 14- or 30-type lock and 719A tool.
- 2.05** Provisions are made for use of four security studs.
- 2.06** Coin return is designed to defer stuffing.
- 2.07** Has transmission characteristics equivalent to 500-type telephone set.
- 2.08** Arranged to accept 1B coin receptacle.
- 2.09** 1D or 1E coin receptacle cover may be used.



**B. 236G**

**Ordering Guide**

- Collector, Coin 236G-3, 236G-44, 236G-51, or 236G-60

**2.10 Replaceable Components Fig. 3, 9, 10, and 11)**

- P-89E500\* lower housing unit assembly, consisting of:

P-11E964 coin relay-hopper assembly

P-14E438 return chute assembly

P-15E011 bucket assembly

P-89E400\* lower housing and base assembly

- P-89E000\* upper housing assembly, consisting of:

P-20A125 gong signal and chute assembly

6C-3 or 6M-3 dial\*\*

P-29E299 terminal plate assembly

P-28E806 network and bracket assembly

P-29E302 connector assembly

P-12A674 plunger and P-16A760 hinge assembly

10H-44 lock (key not furnished)

452B capacitor

- P-89E100\* backplate assembly, consisting of:

P-81R700\* backplate

P-29E307 ringer assembly

P-16A741 switchhook arm assembly

P-29E182 switchhook spring assembly

P-12E855 switchhook assembly

P-44E616 bracket and connector assembly  
G3R handset

1A backplate

\* The last two digits specify color suffix code used (—03 black, —51 green, or —60 light beige).

\*\* The 6C-3 dial is used with a black coin collector. The 6M-3 dial is used with a green or light beige coin collector.

**2.11 Associated Apparatus (order separately)**

- 61R filter
- 1A type coin collector door
- 1B coin receptacle
- 1D coin receptacle cover
- P-372083 alarm switch assembly
- 257A alarm switch assembly
- 14D or 30A lock and keys\*
- 8B-44 card holder
- 227A alarm switch assembly
- KS-19277 lock\*

\* Order must specify authorized recipient to whom keys are to be sent.

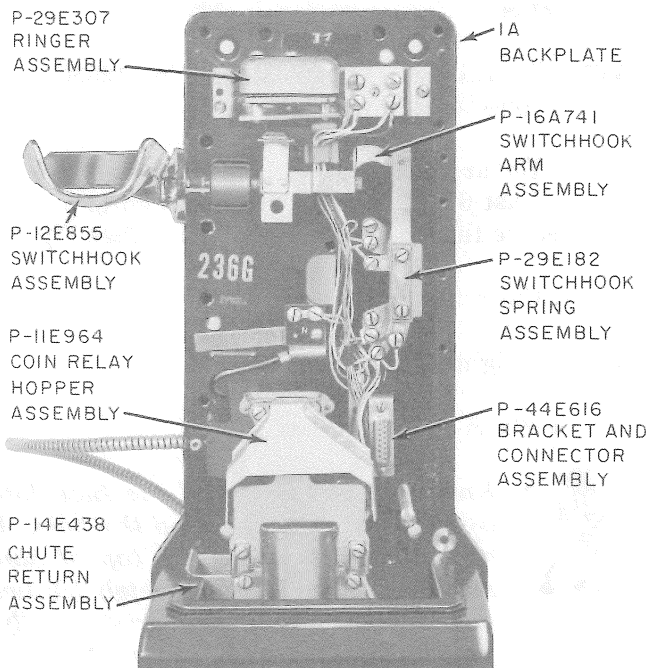
**Design Features**

**2.12** The 236G coin collector is equipped with a jack and plug for electrically connecting the upper and lower housings.

**2.13** The upper housing is secured by a 10H-44 lock plus a KS-19277 lock. The 1A coin collector door is secured by a 14D or 30A lock.

**2.14** The 1A backplate, has provisions for four security studs.

**2.15** The coin collector is equipped with a pull bucket type coin return chute and a coin release pushbutton and is designed to accept U.S. nickels, dimes, and quarters.



**Fig. 9—P-89E100 Backplate Assembly**

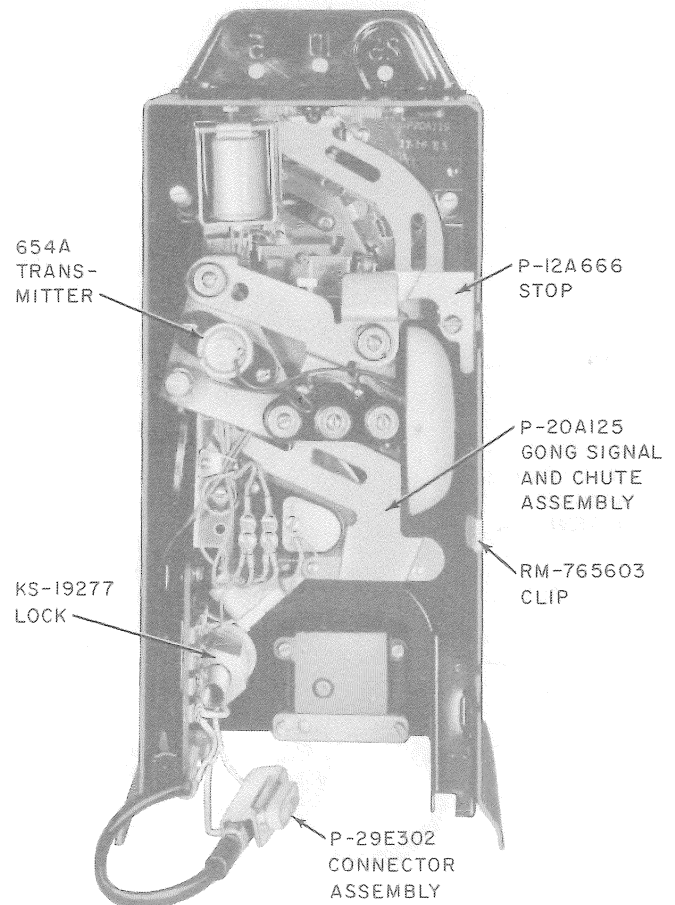
**2.16** The coin collector is arranged for 10-cent operation with an initial deposit of at least one dime (or two nickels) required for operation.

**2.17** A P-339098 cutover clip may be ordered separately and installed on the coin chute assembly to convert the coin collector to 5-cent operation. The clip holds the electromagnet arm in its operated position.

**2.18** Coins deposited give distinctive gong signals audible to the operator. Coins may be collected or refunded while patron is on line or at the completion of the call. Coins are returned when deposited in the wrong slot.

**2.19** If a call is abandoned after an initial deposit of a single nickel, the coin will be returned when handset is restored or when the coin release pushbutton is depressed. A nickel deposited before the handset is removed will be returned.

**2.20** If a call is abandoned after an initial deposit has been made the coin(s) will be returned after the handset is restored. A dime or quarter deposited before the handset is removed will be returned only by removing the handset from the switchhook and restoring it again.



**Fig. 10—P-89E000 Upper Housing Assembly**

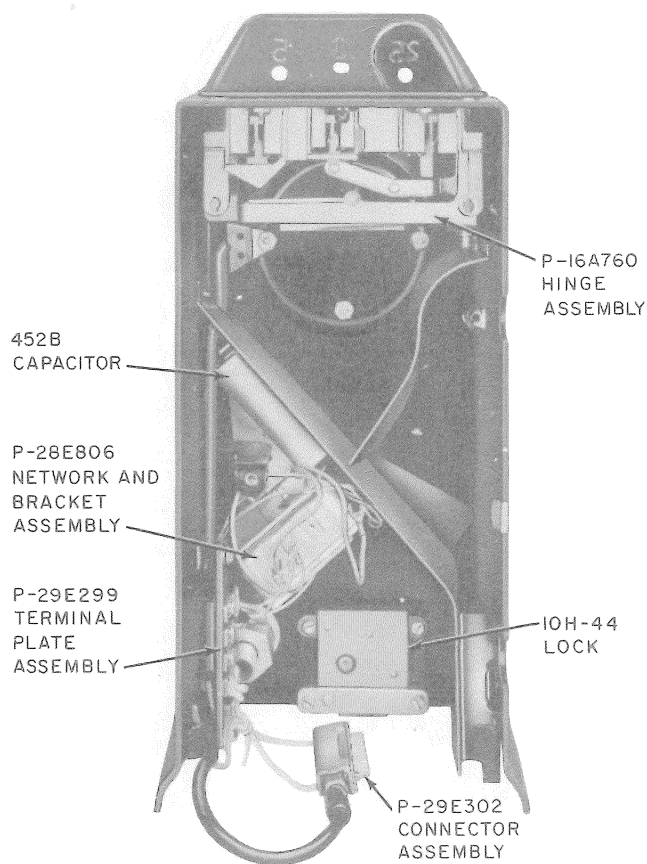
**2.21** The coin collector is designed for mounting in telephone booths or walk-up, drive-up mountings. It may be also be mounted on a wall by means of a 144D or 174A backboard.

**2.22** The 236G coin collector is arranged to accept the 1B coin receptacle (cash box).

#### **Optional Ringer**

**2.23** The G1C ringer mounted in the 236G coin collector may not be loud enough in semipublic locations where the ambient noise is at a high level. A 687A subscriber set equipped with a C4 ringer may be used to rectify this condition.

**2.24** Refer to Division 506, section entitled; Service, Coin Collectors, 236G for connections of the 687A subscriber set.



**Fig. 11—Upper Housing With Gong Signal and Chute Assembly Removed**

### 3. INSTALLATION

#### A. 235G and 1235G

##### Location

**3.01** Consider the following:

- Visibility, accessibility, and possible accident hazards in selecting location

**3.02** Avoid locations over or adjacent to counters, showcases, or other property which could be accidentally damaged by falling handsets.

##### Application

**3.03** To fully recess a 235G and/or 1235G coin collector in a wall:

(1) Ensure that the wall is deep enough (at least 6 inches) and strong enough to provide a secure flush mounted installation. (See Fig. 4.)

(2) Cut a hole in the wall

- Height—22-1/2 inches

- Width—16-1/4 inches



*Ensure that the lip of the faceplate overlaps the wall around the hole. If security studs are used, top of hole must be enlarged approximately 1/2-inch and a false panel (procured locally) provided to close the extra opening.*

**3.04** Refer to Table A for all other applications.

##### Security Studs

**3.05** Refer to Fig. 12 for mounting screw and security stud locations in the coin collector.

*Note:* Security studs are not furnished and must be ordered separately.

##### Wiring

**3.06** Select and place wire in accordance with sections covering inside wiring. Wire all coin collectors with triple conductor station wire or equivalent and provide individual ground for each station. The ground connection for this conductor must be the same one used for signaling ground.

**3.07** Feed inside wire through wire entrance hole (Fig. 12) and connect to terminals T, R, and GRD on TB1. Dress wire away from coin collector door.

**3.08** Wiring should not interfere with passage of coins through coin chute or with any moving parts.

**TABLE A**  
**APPLICATION OF 235G AND 1235G COIN COLLECTORS**

BOOTH, SHELF, OR MOUNTING	BACKBOARD REQUIRED	SECURITY STUDS		COVER (NOTE 1)
		P-10E070 (SHORT SHOULDER- LONG THREAD)	P-12E798 (LONG SHOULDER- LONG THREAD)	
KS-19206 Booth	KS-19206, List 7 Installation Kit	4		127B-67
KS-19340 Booth	KS-19340, List 54 Backboard	4		127B-67
KS-19426 Mounting	Furnished		4	
KS-19442 Booth	KS-19340, List 54 Backboard	4		127A-67
KS-20194 Shelf	Furnished	4		

**Notes:**

1. Three No. 8-32 by 3/16 RHM screws are furnished with cover for installation.
2. Seven 1/4-20 by 5/8 hardened RHM screws (P-23F790) are furnished with each coin telephone set for mounting to backboard.

**3.09** Conceal wiring near coin station. If this is not practical, use approved moulding or conduit to conceal wiring.

**3.10** Locate connecting block, protector or other terminating apparatus, where they will be inaccessible to the public.

**Instruction Card**

**Note:** Instruction cards are not furnished and must be procured locally.

**3.11** To install card:

- (1) Insert in faceplate.

- (2) Push up with fingers.

- (3) Snap card in place.

- (4) Ensure that card is seated properly in slot.

**3.12** To remove card:

- (1) Push up with fingers.

- (2) Pry top out with small screwdriver or equivalent.

**Number Card (1235G)**

**Note:** The number card is furnished locally.

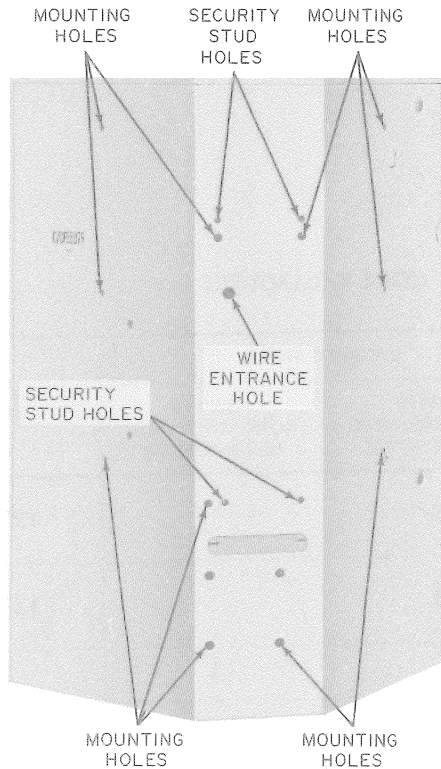


Fig. 12—Location of Mounting, Security Stud, and Wire Entrance Holes

3.13 Pinch card with fingers and insert in slot provided on front of faceplate.



*After installation has been completed, verify that the coin collector is operating correctly.*

## B. 236G

### Location

**Note:** The location of a coin collector should be specified by the service order or an accompanying work sheet. If a location is not specified, obtain instructions from the customer before proceeding.

3.14 Repeat 3.01

### Security of Coin Station

3.15 Avoid locations where:

- Coin station can be dislodged by hard use.
- Fasteners cannot be placed in solid backing.
- Coin station can be pried loose (on round columns, door or window facings, uneven surfaces, etc.).

### Application

3.16 To install the 236G coin collector on a horizontal surface such as a table or counter top, use a 139A backboard.

3.17 To install on a wall without a shelf, use a 174A backboard. See Fig. 13 for requirements.

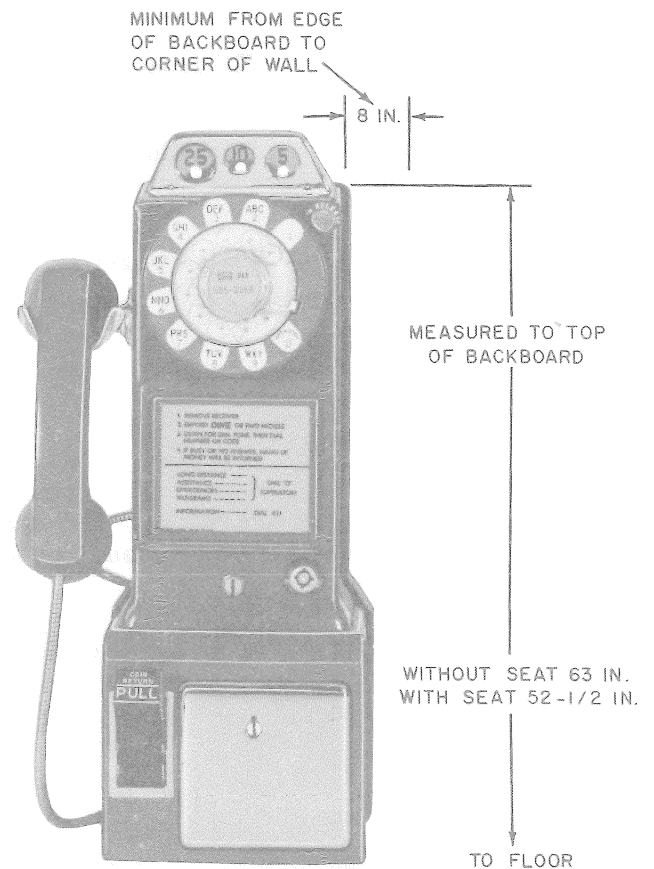


Fig. 13—Suggested Mounting Height and Clearance

**3.18** Refer to Table B for all other applications.

#### Installing



*Remove handset from switchhook before removing or replacing upper housing to avoid damage to the gate operating arm. Do not reassemble upper housing on coin first coin collectors without placing a P-10F783 cover over the coin relay.*

#### Alarm Switches and Security Devices

**3.19** Alarm switches and security devices are described in Division 506, section entitled: Service, Security Devices. The local telephone company shall regulate the installation of these devices.

**3.20** Fig. 13 shows the suggested mounting height and clearance for all coin stations. Stations may be mounted at other heights to meet local conditions providing this does not create service or maintenance problems.

**3.21** To mount coin station:

- (1) Place required number of screw fasteners in upper and lower mounting holes.

*Note:* If coin compartment is not open, the lower fasteners will be added later by the public telephone representative.

- (2) Bring wires through opening in backplate.
- (3) Avoid bowing backplate by partially tightening each screw fastener alternately.

**3.22** Ground housing assembly, as follows:

(a) **Prepay open type installation**

- Connect JKT lead or GS insulated wire as shown in Fig. 14.
- Dress wire so that it will not interfere with moving parts of coin relay.

(b) **Indoor wooden booths**

**TABLE B**

**APPLICATION OF 236G COIN COLLECTOR**

BOOTH, SHELF, OR MOUNTING	BACKBOARD REQUIRED	SECURITY STUDS	
		P-10E070 (SHORT SHOULDER- LONG THREAD)	P-12E798 (LONG-SHOULDER- LONG THREAD)
KS-14611 Booth	Furnished	4	
KS-16797 Booth	Furnished		4
KS-19206 Booth	KS-19206, List 6 Installation Kit	4	
KS-19267 Shelf	Furnished	4	
KS-19340 Booth	Furnished	4	
KS-19425 Booth	Furnished		4
KS-19426 Mounting	KS-19426, List 8 Installation Kit		4
KS-19580 Booth	Furnished	4	
KS-19945 Shelf	Note 1		4

**Notes:**

1. A 178A-3 backboard is furnished with each KS-19945 shelf unless otherwise specified.
2. Seven 1/4-20 by 5/8 hardened RHM screws (P-23F790) are furnished with each coin telephone set for mounting to backboard.

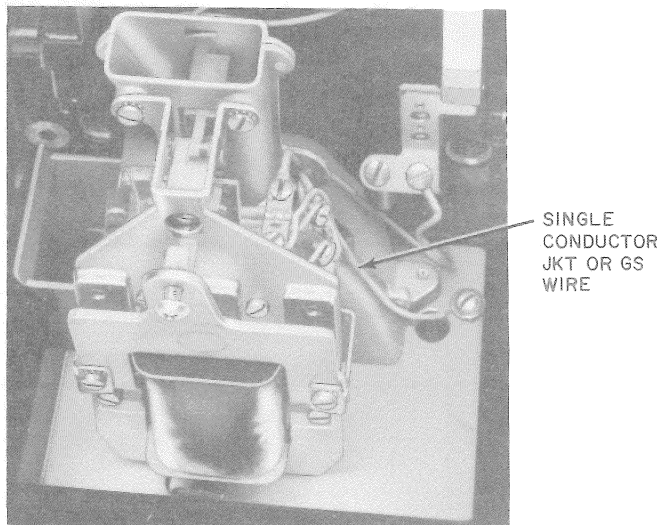
- A 14-gauge insulated ground wire (P-12C414 ground wire assembly) is provided. (Fig. 15)
- Connect ground wire from outside grounded BX armored power cable to ventilator or blower and to housing ground screw on coin station.

(c) **Metal booths**

- Grounding is provided through mounting screws.

**3.23** To ground upper housing to backplate:

- Place U-shaped spring clip on left edge of upper housing so as to contact housing contact spring (Fig. 16).

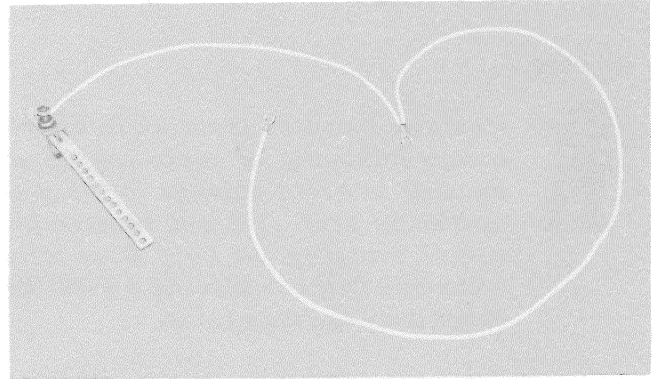


**Fig. 14—Method of Grounding Coin Collector Housing Assembly, Open Type Installation**

**Wiring**

**3.24** Repeat 3.06.

**3.25** Feed inside wire through wire entrance hole and connect ring lead to Y terminal on switch hook, tip lead to R terminal on switch hook, and GRD to G terminal on coin relay.



**Fig. 15—P-12C414 Ground Wire Assembly**

**3.26** Repeat 3.08 through 3.10.

**4. MAINTENANCE**

**A. Range Data**

**4.01** Refer to Table C for dial Long Line requirements.

**4.02** Refer to Table D for loop ranges.

**B. Operate Values of Coin Relays**

**4.03** Refer to Table E for old and new values.



*Currently manufactured and repaired coin relays differ in operate and nonoperate values from earlier relays found in the field. These readjusted relays are marked with an asterisk(\*) adjacent to the part number.*

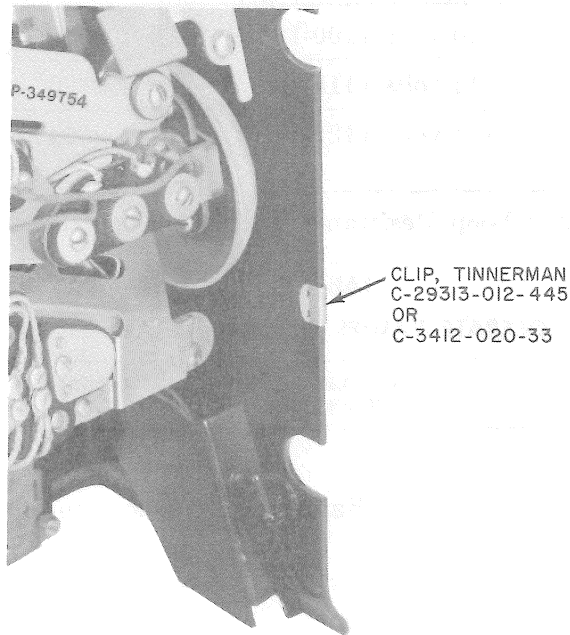
**C. Door and Liner Assembly (235G and 1235G)**

**4.04** To open door:

- (1) Unlock 29A lock (Fig. 1 or 2).
- (2) Insert 719A tool into slot, turn 1/4-turn clockwise, and release locking mechanism.

**Note:** Do not open door fully until plug (P1) is disconnected (Fig. 5).

- (3) Open door approximately 3 inches and disconnect P1 from J1.



**Fig. 16—Method of Grounding Upper Housing to Backplate**

**TABLE C**

**REQUIREMENTS FOR DIAL LONG LINE CIRCUITS ON COIN LINES  
(FOR LIMITATIONS OTHER THAN COIN CONTROL)  
(ASSUMES 300-OHM STATION SET RESISTANCE)**

TYPE OF CENTRAL OFFICE	REQUIREMENTS
Step-by-Step	DLL CKT Required on Loops Over 1050 ohms
Panel	DLL CKT Required on Loops Over 885 ohms
No. 1 Crossbar	DLL CKT Required on Loops Over 1200 ohms
No. 5 Crossbar	DLL CKT Required on Loops Over 1300 ohms
No. 1 ESS	DLL CKT Required on Loops Over 1300 ohms
No. 2 ESS	DLL CKT Required on Loops Over 1300 ohms



TABLE D

MAXIMUM ALLOWABLE LOOP RANGES FOR CENTRAL OFFICE  
COIN SUPPLY VOLTAGES—COLLECT AND RETURN ONLY  
(MAXIMUM GROUND RESISTANCE 50 OHMS;  
MAXIMUM DC EARTH POTENTIAL  $\pm 3$  VOLTS)

TYPE OF CENTRAL OFFICE	MINIMUM COIN VOLTAGE	LOOP RANGE WITH 48 MA. OP. RELAY	LOOP RANGE WITH 41 MA. OP. RELAY
SXS, Panel, No. 1 XBar	100 volts (100-120V)	1500 ohms	2200 ohms
SXS, Panel, No. 1 XBar	115 volts (115-120V)	2100 ohms	3000 ohms
No. 5 XBar, No. 1 ESS, No. 2 ESS	125 volts (125-135V)	2500 ohms	3400 ohms

*Note:* Loop Range = Conductor Loop Resistance (excluding coin telephone set resistance).

TABLE E  
OPERATE VALUES OF COIN RELAYS

MARKING ON RELAY	OPERATING TIME	OPERATE CURRENT	NON-OPERATE CURRENT	REMARKS
P-10E786	625 $\pm$ 75 millisec (Note 1)	48 milliamps	40 milliamps	Coil of restoral spring has a diameter of ap- proximately 5/32-inch
P-13E961				
P-10E786*	450 $\pm$ 50 millisec (Note 2)	41 milliamps	30 milliamps	Coil of restoral spring has a diameter of ap- proximately 9/32-inch
P-13E961*				

*Notes:*

- 1 — The timing interval of 625 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 6.
- 2 — The timing interval of 450 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 4.

(4) Door can now be fully opened.

**Note 2:** A P11C test cord (Fig. 7) is used to connect plug (P1) to jack (J1) which allows the set to be operative while door and liner assembly is opened.

(2) Lift P-27E847 coin twister (top section) up and out.

(3) Remove screws and nuts holding P-44E390 coin twister frame assembly.

(4) Lift frame assembly up and off.

(5) Install, using reverse procedure.

**Coin Twister Assembly**

**4.05** To remove coin twister assembly:

- (1) Loosen screws in middle of twister assembly (Fig. 5).

**Gong Signal and Chute Assembly**

**4.06** To remove gong signal and chute assembly:

- (1) Disconnect wires per Table F.

- (2) Remove P-111877 screw and P-12A666 stop (Fig. 5).
- (3) Loosen P-25E445 screw in lower left corner of chute assembly (Fig. 17). Exercise care not to lose P-12A681 spring located under screw head.
- (4) Loosen two P-11E183 bayonet guides on chute assembly (Fig. 5).
- (5) Lift off gong signal and chute assembly.
- (6) Install, using reverse procedure.

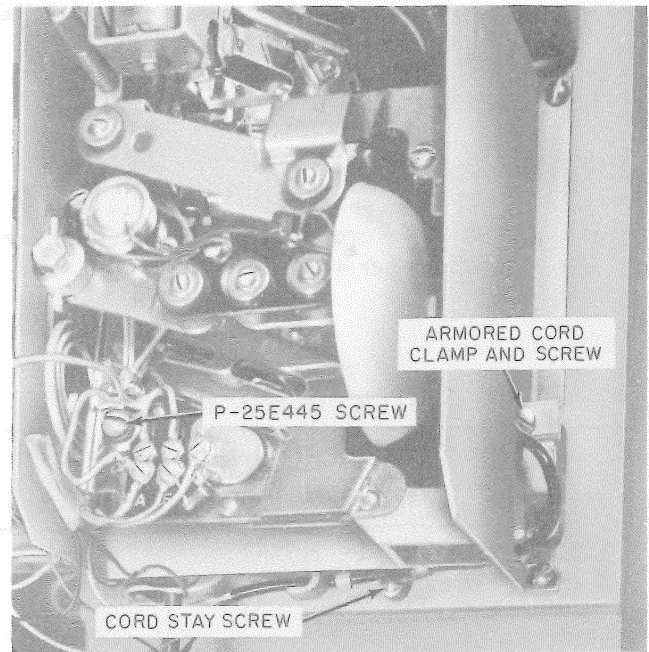
**TABLE F**  
**GONG SIGNAL AND CHUTE ASSEMBLY**  
**CONNECTIONS**

235G		1235G	
WIRE COLOR	DISCONNECT FROM TERM.	WIRE COLOR	DISCONNECT FROM TERM.
G	A of chute assem.	G	A of chute assem.
G	X of chute assem.	G	E of chute assem.
Y	E of chute assem.	Y	E of chute assem.
BR	BR of TB4	BR	BR of TB4

#### Baffle and Hinge Assembly

**4.07** To remove baffle and hinge assembly (Fig. 5):

- (1) Disconnect all wires from TB4
- (2) Remove retainer ring from rear of the coin release shaft.
- (3) Remove four P-181641 screws, four P-285080 lockwashers and lift off baffle and hinge assembly.
- (4) Install, using reverse procedure.



**Fig. 17—Location of Cord Stay Screw and Cord Clamp**

#### Dial and Housing Assembly

**4.08** To remove dial housing:

- (1) Remove coin twister assembly (4.05).
- (2) Remove gong signal and chute assembly (4.06).
- (3) Remove baffle and hinge assembly (4.07).
- (4) Remove four mounting screws in dialing housing.
- (5) Lift off dial housing.

**Note:** Handset cord will pull through cover to enable access to dial without disconnecting cord.

- (6) Install, using reverse procedure.

**4.09** To remove dial:

- (1) Remove dial housing (4.08).
- (2) Disconnect dial leads from TB2 (dial terminal board).

- (3) Loosen two mounting screws on sides of dial through access holes in dial housing.

- (4) Lift off dial.

#### 4.10 To install dial:

- (1) Use reverse procedure in 4.09 and make connections per Table G.

**TABLE G**  
**DIAL CONNECTIONS**

235G		1235G	
WIRE COLOR	CONNECT TO	WIRE COLOR	CONNECT TO
Y	TB2-1	G	TB2-1
W	TB2-2	W	TB2-2
G	TB2-2	BL	TB2-3
BL	TB2-3	O-BK	TB2-4
W	TB2-9	R	TB2-5
Y	TB2-11	R-G	TB2-6
		O-R	TB2-8
		BK	TB2-11

### Handset

#### 4.11 To remove handset:

- (1) Remove gong signal and chute assembly (4.06).
- (2) Disconnect handset leads from TB4.
- (3) Loosen cord stay screw (Fig. 17).
- (4) Remove screw and cord clamp from armored cord.
- (5) Pull cord out front of cover.
- (6) Install, using reverse procedure.

### D. Housing Assembly (235G and 1235G)

#### Ringer

#### 4.12 To remove ringer:

- (1) Disconnect ringer leads from TB3.
- (2) Remove two screws.
- (3) Lift ringer up and off.

#### 4.13 To install ringer:

- (1) Mount ringer in place and secure with two screws.
- (2) Connect ringer leads as follows:

WIRE COLOR	CONNECT TO
BK	TB3-R
R	TB3-T
S-R	TB3-A
S	TB3-K

### Return Chute Assembly

#### 4.14 To remove return chute assembly (Fig. 18):

- (1) Loosen mounting screw.
- (2) Lift assembly up and out.

**Note:** It may be necessary to remove P-28E453 clip.

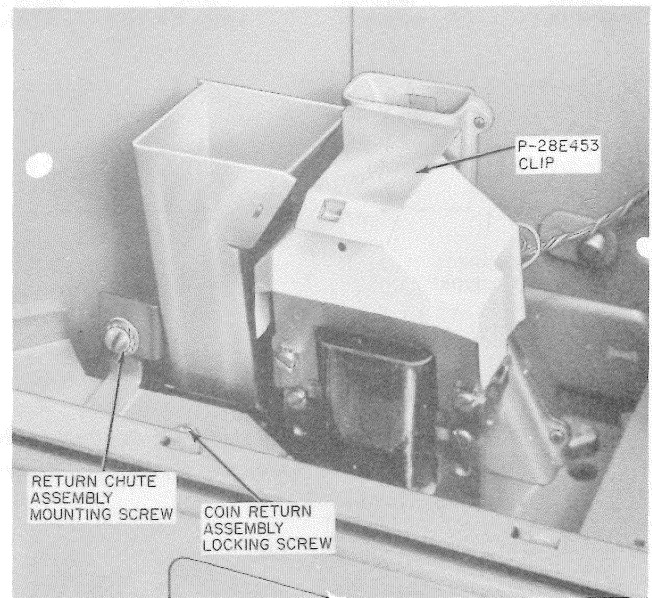
#### 4.15 To install return chute assembly:

- (1) Slide the assembly in and down until it is properly seated.
- (2) Tighten the mounting screw.

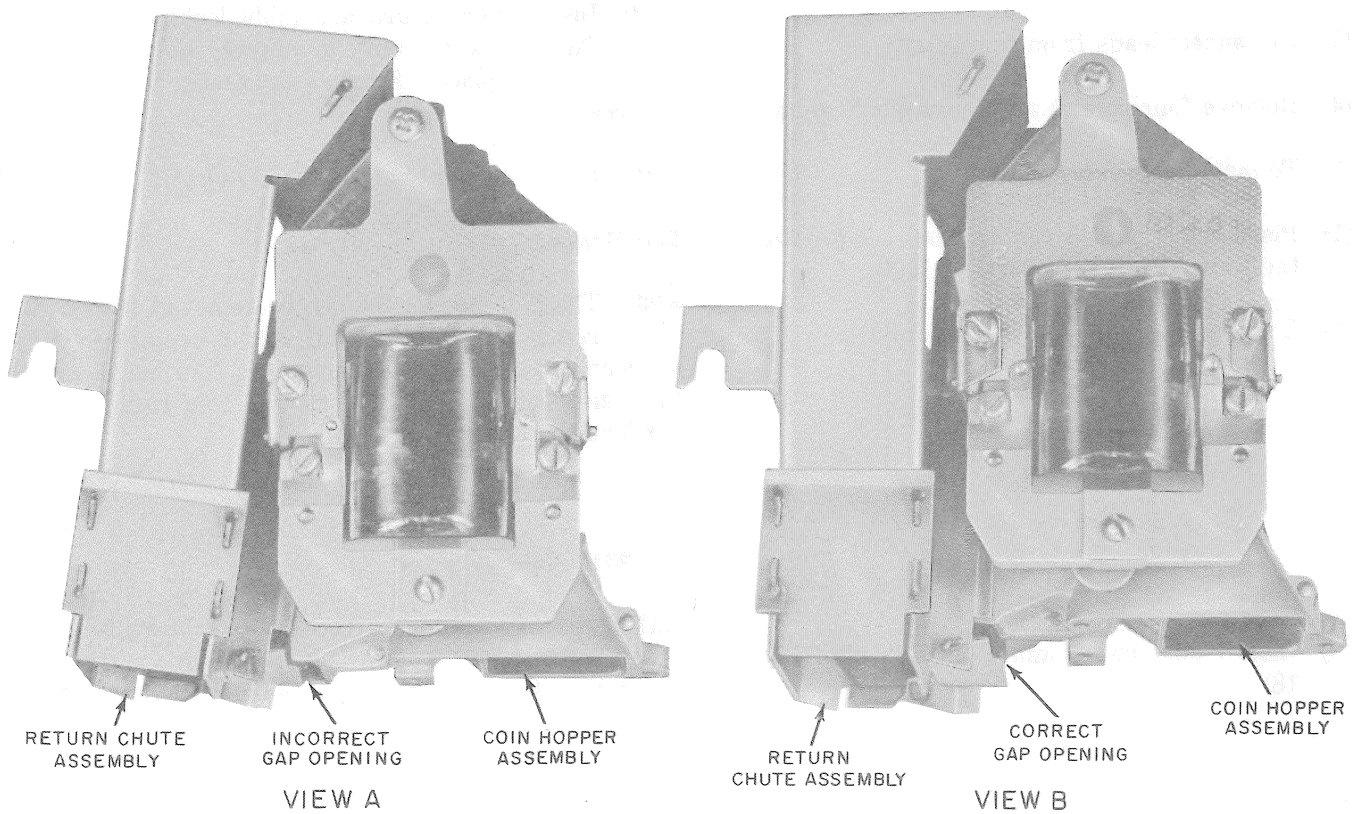


*If the return chute is not installed properly, there may be a gap between the return chute and the hopper assembly large enough to allow coins to drop into the housing. Refer to Fig. 19. This gap may be checked by directing a light down the opening of the return chute, tripping the relay and hopper assembly to the reject position, and looking down the opening of the hopper assembly. (See Fig. 20.) If a gap exists, loosen the mounting screw and reposition the return chute.*

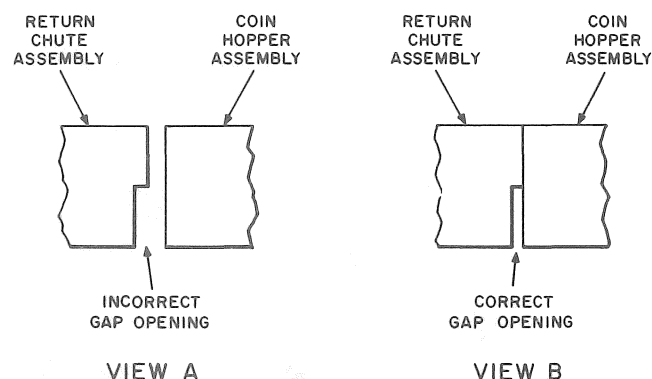
**Check again with a light (Fig. 20) and tighten screw when proper alignment is obtained.**



**Fig. 18—Coin Relay and Return Chute Assembly**



**Fig. 19—Alignment of Return Chute Assembly**



**Fig. 20—Relative Position of Return Chute Assembly and Coin Hopper Assembly As Viewed Down Hopper Throat**

### Coin Relay

**4.16** To remove coin relay (Fig. 18):

- (1) Remove return chute assembly (4.14).
- (2) Remove P-28E453 clip and dust cover.
- (3) Disconnect leads from coin relay.
- (4) Remove four screws and remove coin relay.

**4.17** To install coin relay:

- (1) Place coin relay in position and secure with the four screws removed in 4.16(4).
- (2) Connect leads to coin relay as follows:

WIRE COLOR	CONNECT TO
R	1
R	2
G-Y	3
O	G

- (3) Install dust cover and P-28E453 clip (Fig. 18).

- (4) Install return chute assembly (4.15).

### Coin Return Assembly

**4.18** To remove coin return assembly:

- (1) Remove return chute assembly (4.14).
- (2) Remove coin return assembly locking screw (Fig. 18).
- (3) Insert finger in coin return and tilt top forward.
- (4) Lift coin return. Pull coin return assembly out and up.

**4.19** To install coin return assembly:

- (1) Tilt top of coin return assembly toward set.
- (2) Push coin return assembly into set.
- (3) Push in and down on bottom of coin return assembly until flush with front of housing.
- (4) Install coin return assembly locking screw. Tighten screw only enough to hold return assembly in place. Further tightening will bend screw.
- (5) Install return chute assembly (4.15).

### Coin Hopper

**4.20** The coin hopper cannot be removed without removing 4A door and coin receptacle. If it becomes necessary to remove the coin hopper in the field, remove the 4A door and coin receptacle per local regulations.

### E. 236G Coin Collector

**4.21** For maintenance of the 236G coin collector, refer to Part 6 of Division 506 section entitled: Reference—Coin Collectors—Subscriber Set Required.

**SERVICE**  
**COIN COLLECTORS, SUBSCRIBER SET REQUIRED**  
**190 SERIES**

**1. GENERAL**

**1.01** This section provides connection information for the 190-type coin collectors and associated subscriber sets.

**1.02** This section is reissued to:

- Add note required when 685B subscriber set is used with coin collector
- Incorporate several minor changes in drawings
- Delete connection information on 685A and B subscriber sets
- Rearrange drawings to be consistent with associated practices

**1.03** Refer to Sections 506-215-403 and 506-215-404 for connection information pertaining to the 685A and B subscriber sets.

**2. CONNECTION INDEX**

Fig. 1—191, 195, 196, 197 (C, D, G, and H) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections

Fig. 2—191, 195, 196, 197 (CS, DS, GS, and HS) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections

Fig. 3—191, 195, 196, 197 (CT, DT, GT, and HT) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections

Fig. 4—191, 195, 196, 197 (CN, DN, GN, and HN) Coin Collectors—Coin First, Connections

Fig. 5—191, 195, 196, 197 (CN, DN, GN, and HN) Coin Collector—Coin First, Connections

Fig. 6—191, 195, 196, 197 (CNS, DNS, GNS, and HNS) Coin Collector—Coin First, Connections

Fig. 7—191, 195, 196, 197 (CNS, DNS, GNS, and HNS) Coin Collectors—Coin First, Connections

Fig. 8—191, 195, 196, 197 (CNT, DNT, GNT, and HNT) Coin Collectors—Coin First, Connections

Fig. 9—191, 195, 196, 197, (CNT, DNT, GNT, and HNT) Coin Collector—Coin First, Connections

Fig. 10—193G, H and 198G, H Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Postpay, Connections

Fig. 11—193GN, HN and 198GN, HN Coin Collectors—Postpay, Connections

# SECTION 506-330-404

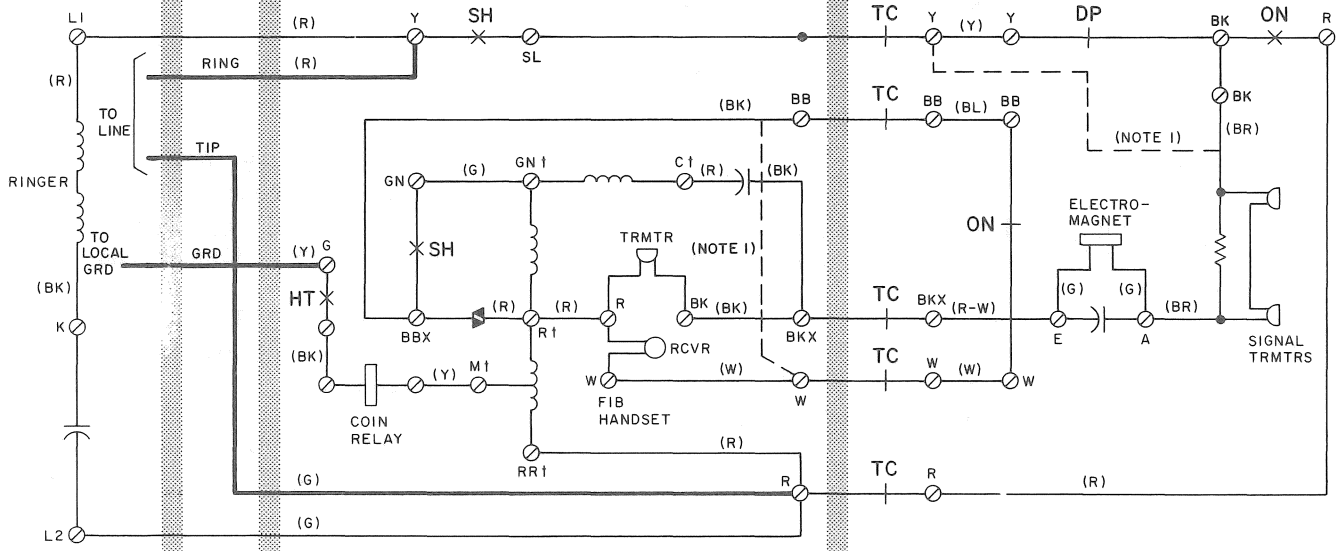
531A; 534DE, DF;  
584DE, DF; OR  
687A SUBSETS

INSIDE  
WIRE

LOWER HOUSING

UPPER HOUSING

6C DIAL

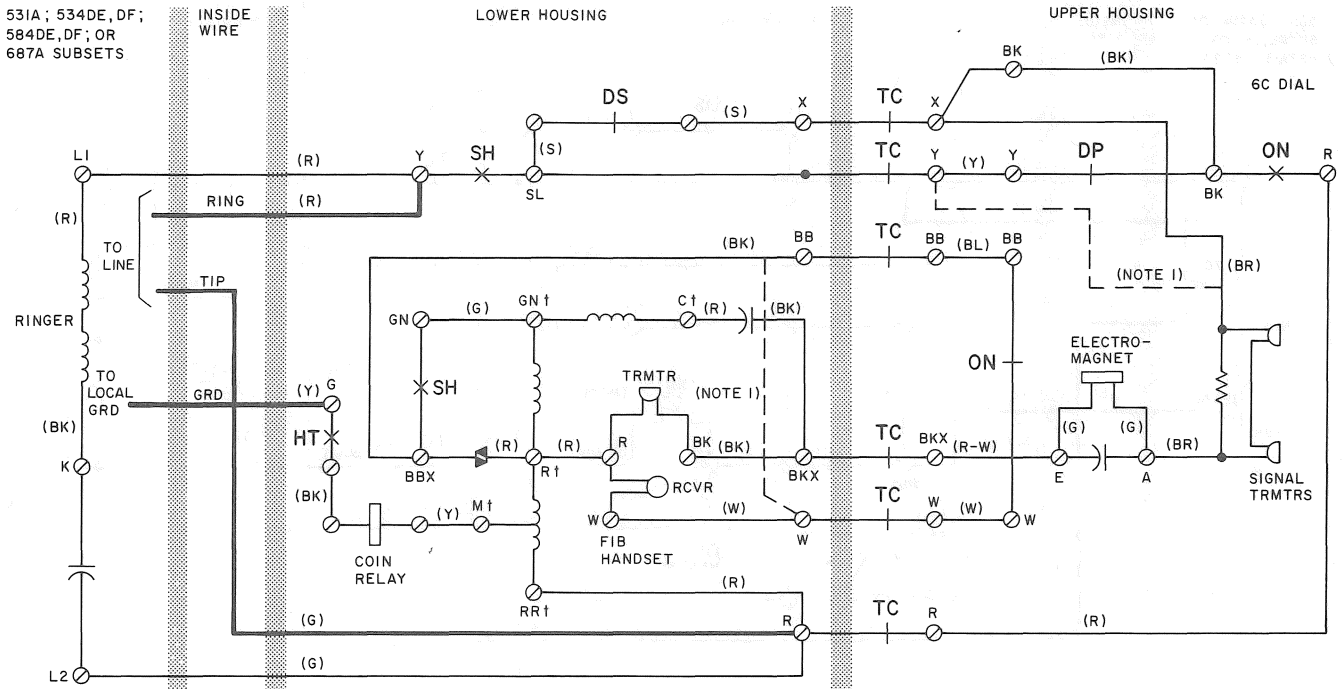


## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (C AND D)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
  2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER-HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
- † 101B INDUCTION COIL TERMINALS

DP - DIAL PULSE CONTACTS  
HT - HOPPER TRIGGER CONTACTS  
SH - SWITCH HOOK CONTACTS  
ON - OFF NORMAL CONTACTS  
TC - TRANSFER CONTACTS  
DS - DIAL SHORTING CONTACTS

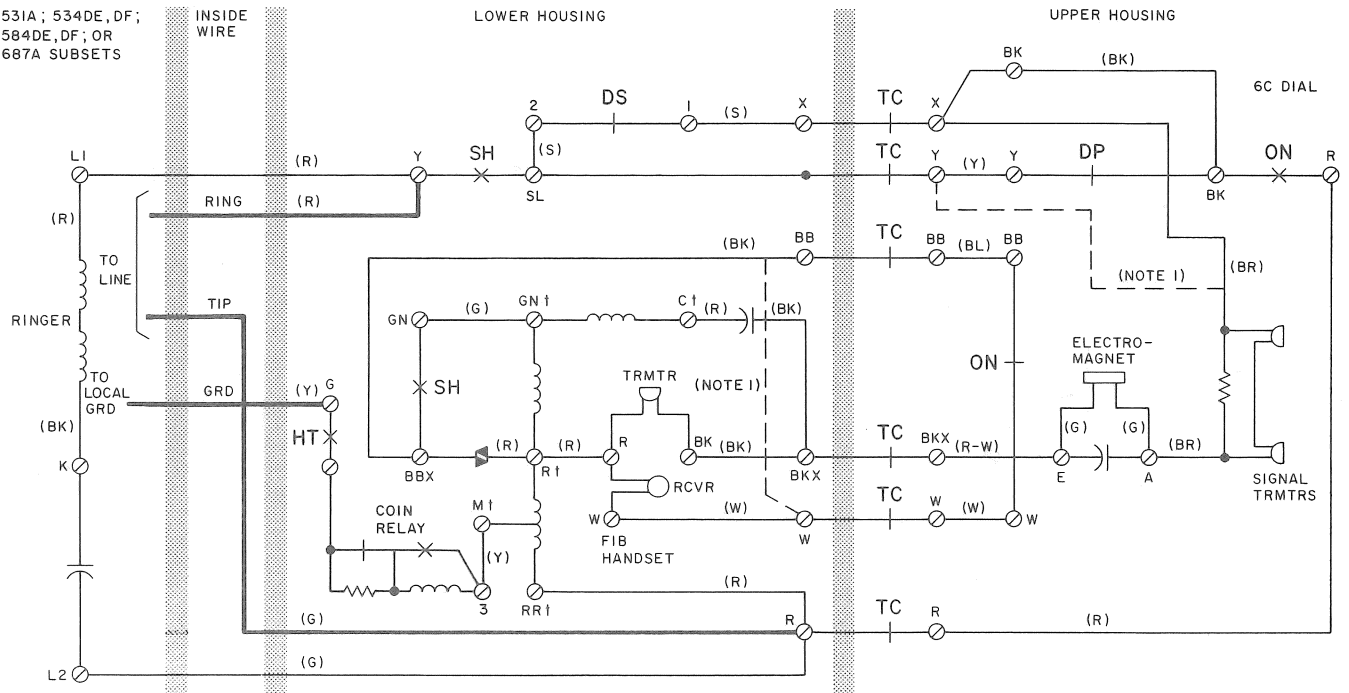
**Fig. 1—191, 195, 196, 197 (C, D, G, and H) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections**



**Fig. 2—191, 195, 196, 197 (CS, DS, GS, and HS) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections**



531A; 534DE, DF;  
584DE, DF; OR  
687A SUBSETS



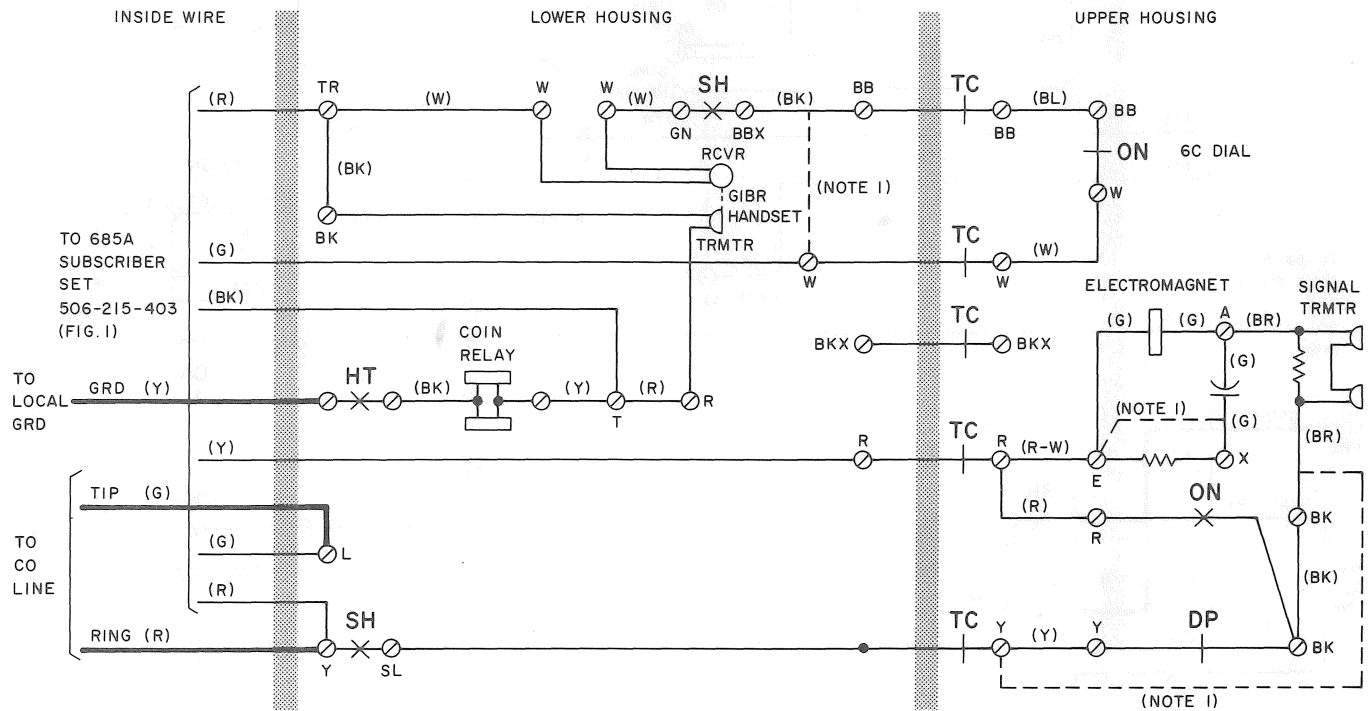
## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CT AND DT)] DIAL IS REPLACED WITH SOC APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER-HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.

† IOIB INDUCTION COIL TERMINALS

DP-DIAL PULSE CONTACTS  
HT-HOPPER TRIGGER CONTACTS  
SH-SWITCH HOOK CONTACTS  
ON-OFF NORMAL CONTACTS  
TC-TRANSFER CONTACTS  
DS-DIAL SHORTING CONTACTS

Fig. 3—191, 195, 196, 197 (CT, DT, GT, and HT) Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Coin First, Connections



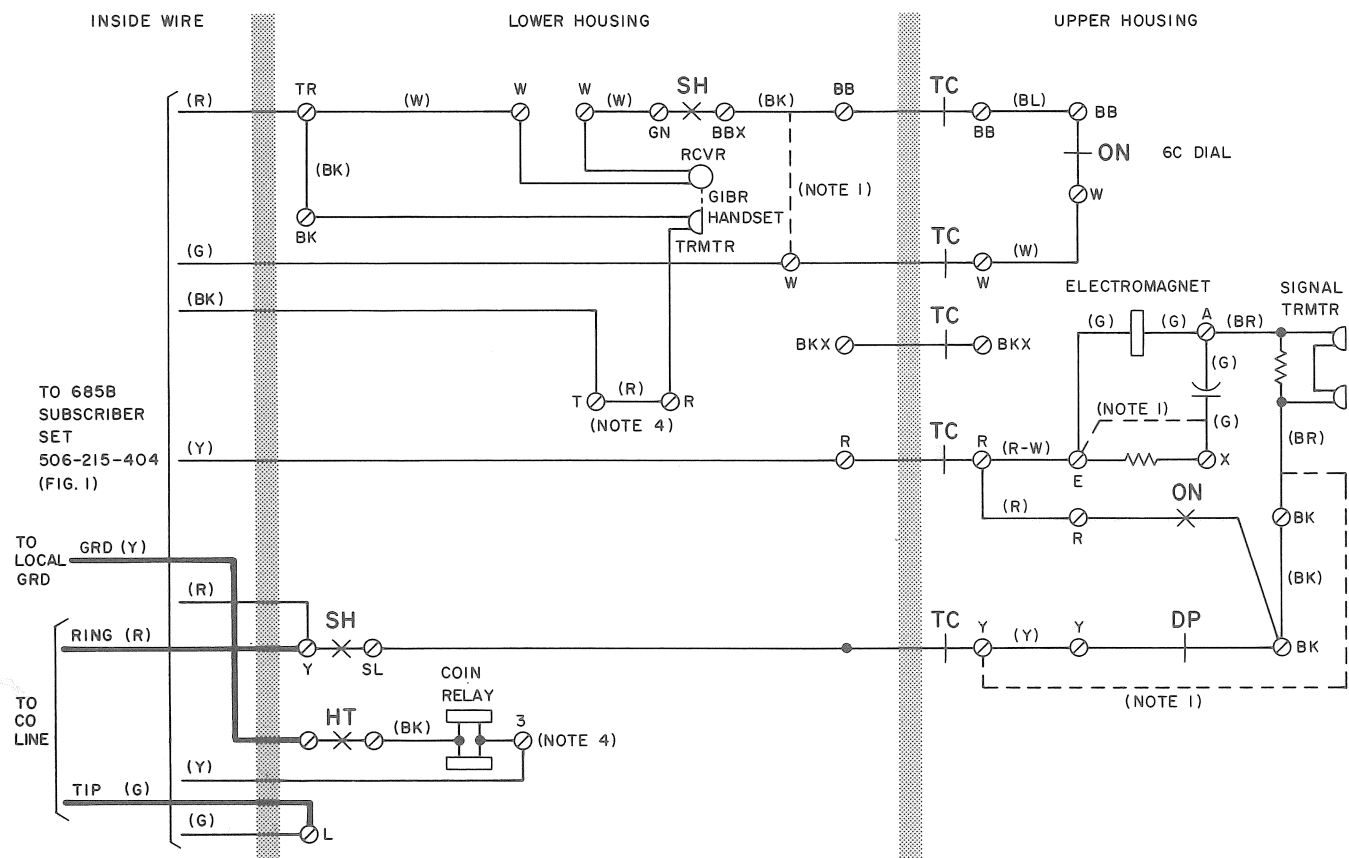
## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CN AND DN)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OR A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.

DP - DIAL PUSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS

Fig. 4—191, 195, 196, 197 (CN, DN, GN, and HN) Coin Collectors—Coin First, Connections

# SECTION 506-330-404

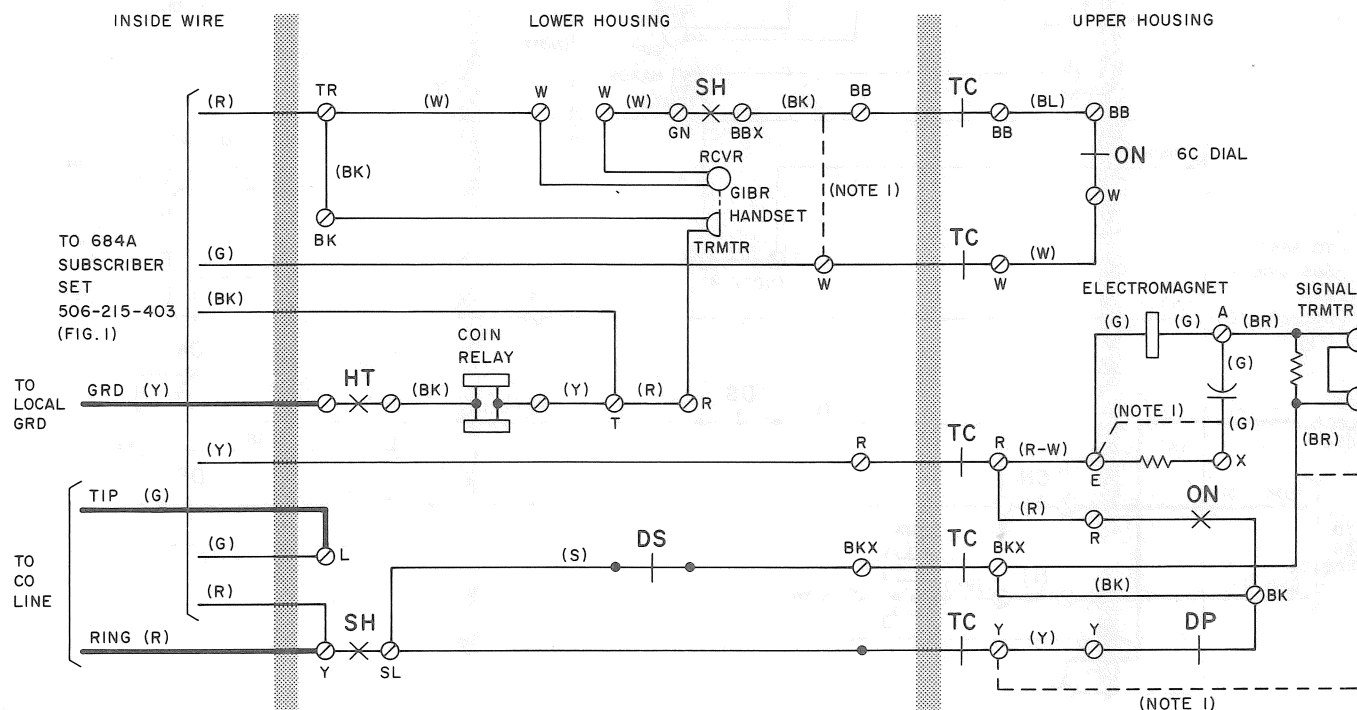


## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CN AND DN)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OR A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.
4. REMOVE THE (Y) STRAP BETWEEN TERMINALS 3 AND T WHEN USED WITH 685B SUBSCRIBER SET.

DP - DIAL PULSE CONTACTS  
HT - HOPPER TRIGGER CONTACTS  
SH - SWITCHHOOK CONTACTS  
ON - OFF NORMAL CONTACTS  
TC - TRANSFER CONTACTS

**Fig. 5—191, 195, 196, 197, (CN, DN, GN, and HN) Coin Collector—Coin First, Connections**



**Fig. 6—191, 195, 196, 197 (CNS, DNS, GNS, and HNS) Coin Collector—Coin First, Connections**

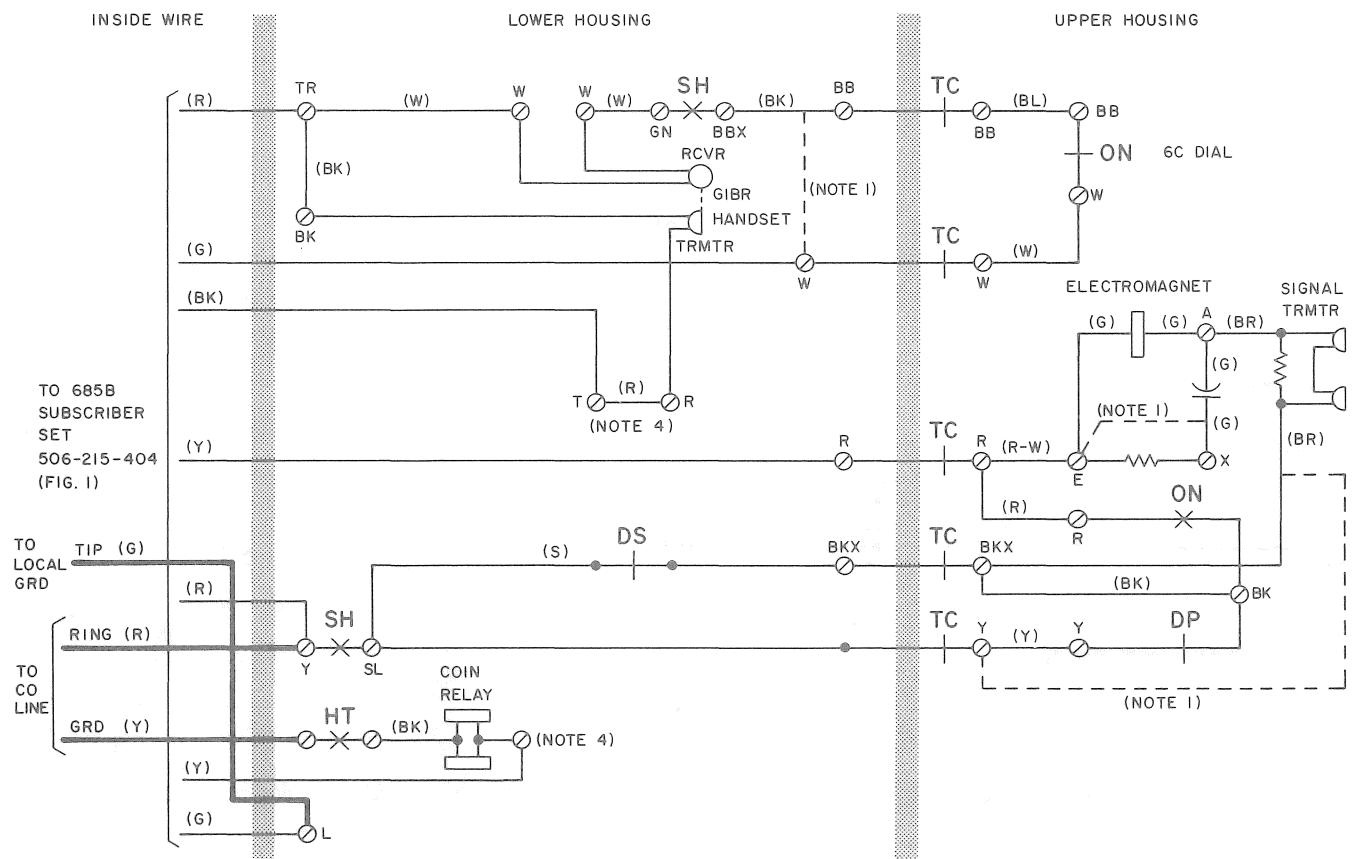
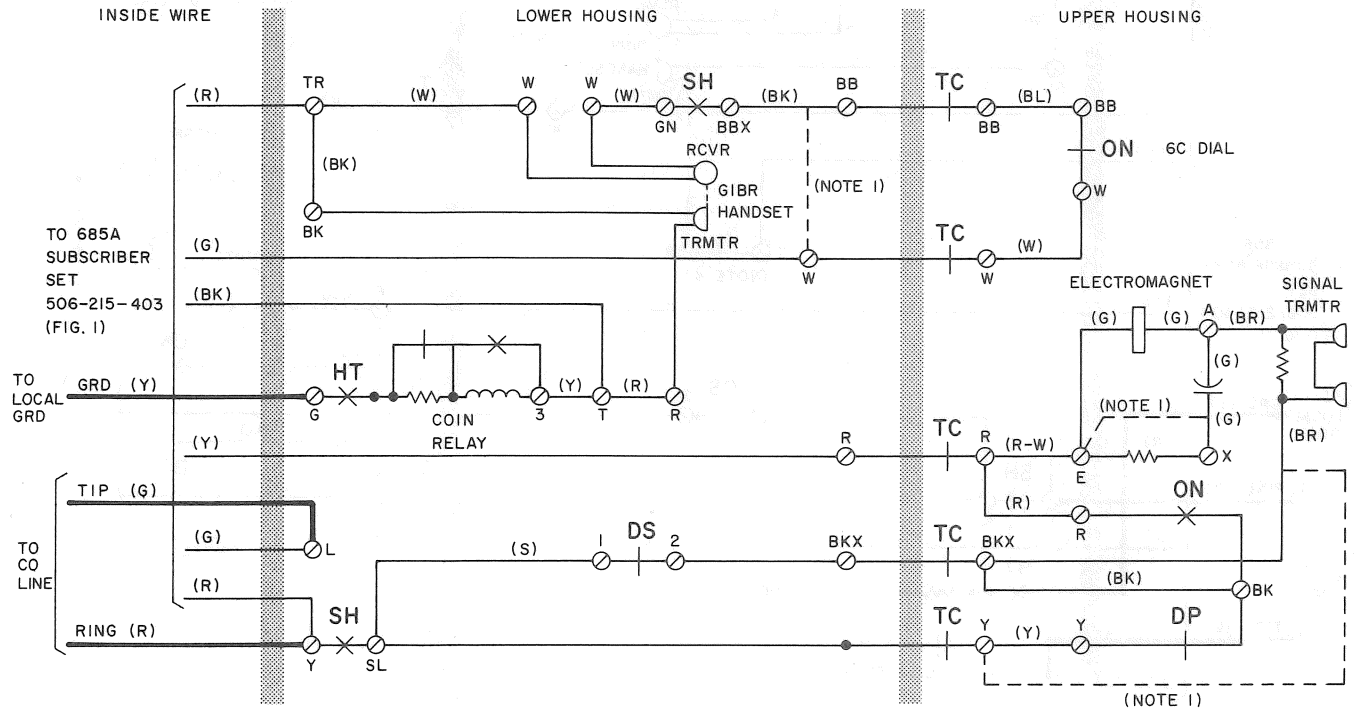


Fig. 7—191, 195, 196, 197 (CNS, DNS, GNS, and HNS) Coin Collectors—Coin First, Connections

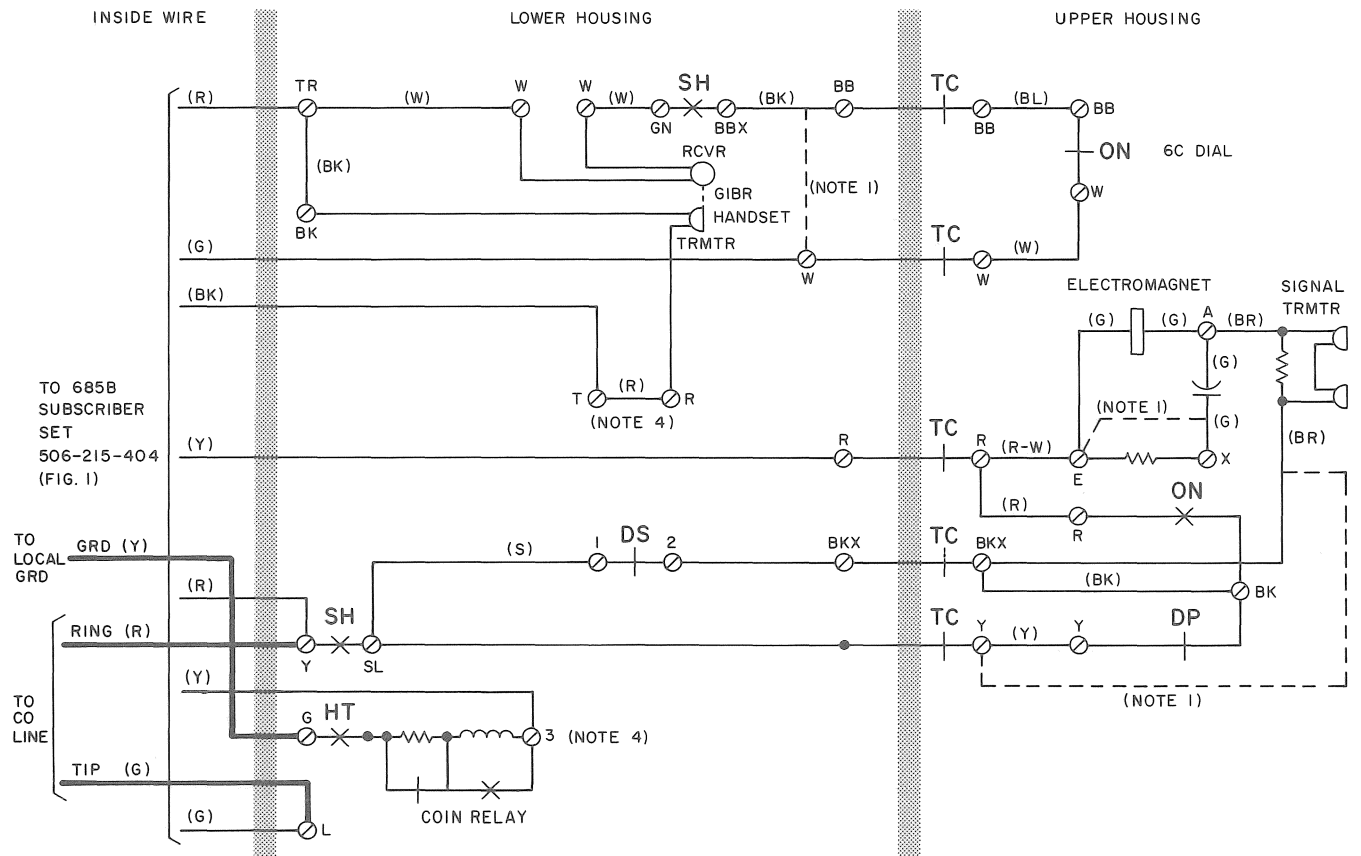


## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CNT AND DNT)] DIAL IS REPLACED WITH SOC APPARATUS BLANK.
2. WHEN A GIR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OR A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.

DP - DIAL PULSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS  
 DS - DIAL SHORTING CONTACTS

Fig. 8—191, 195, 196, 197 (CNT, DNT, GNT, and HNT) Coin Collectors—Coin First, Connections

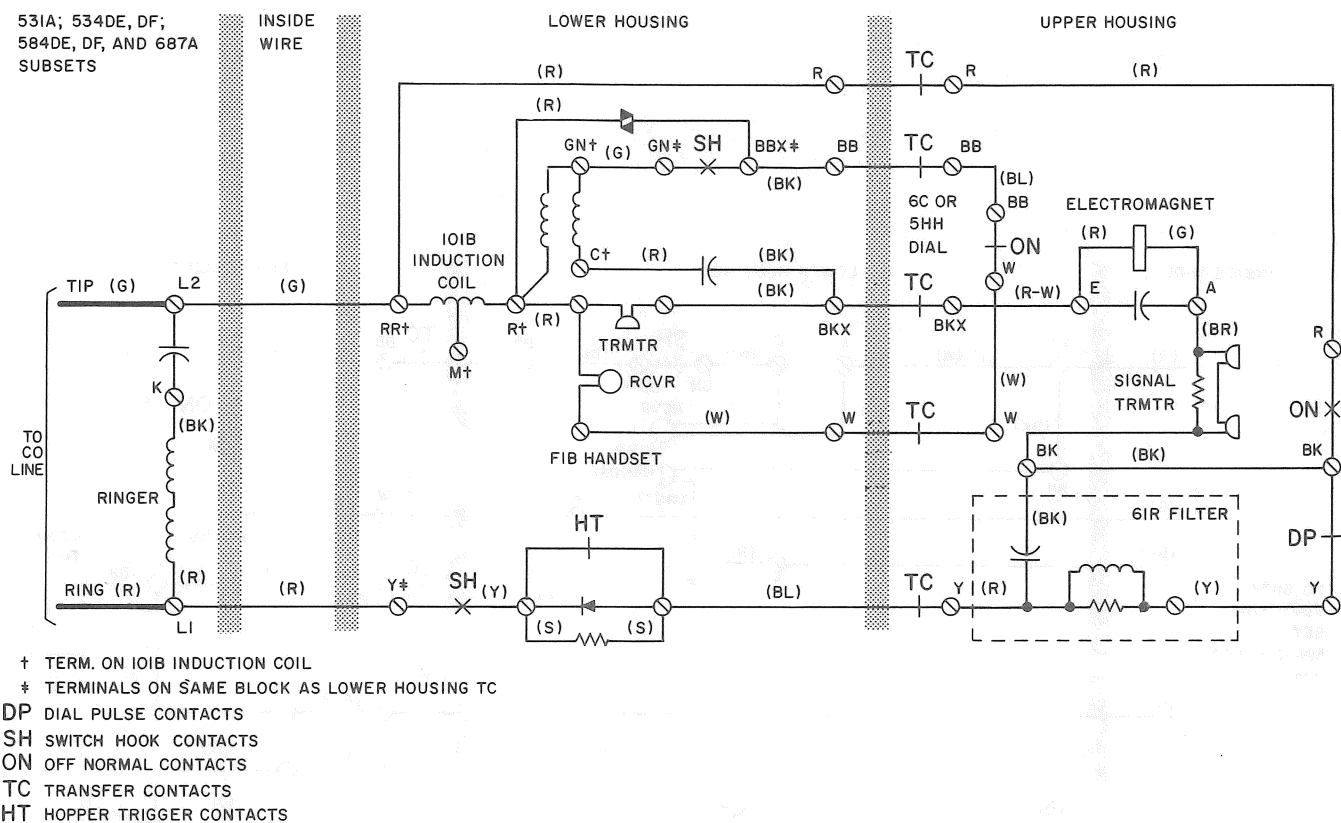


NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [191, 195, 196, 197 (CNT AND DNT)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OR A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.
4. REMOVE THE (Y) STRAP BETWEEN TERMINALS 3 AND T WHEN USED WITH 685B SUBSCRIBER SET.

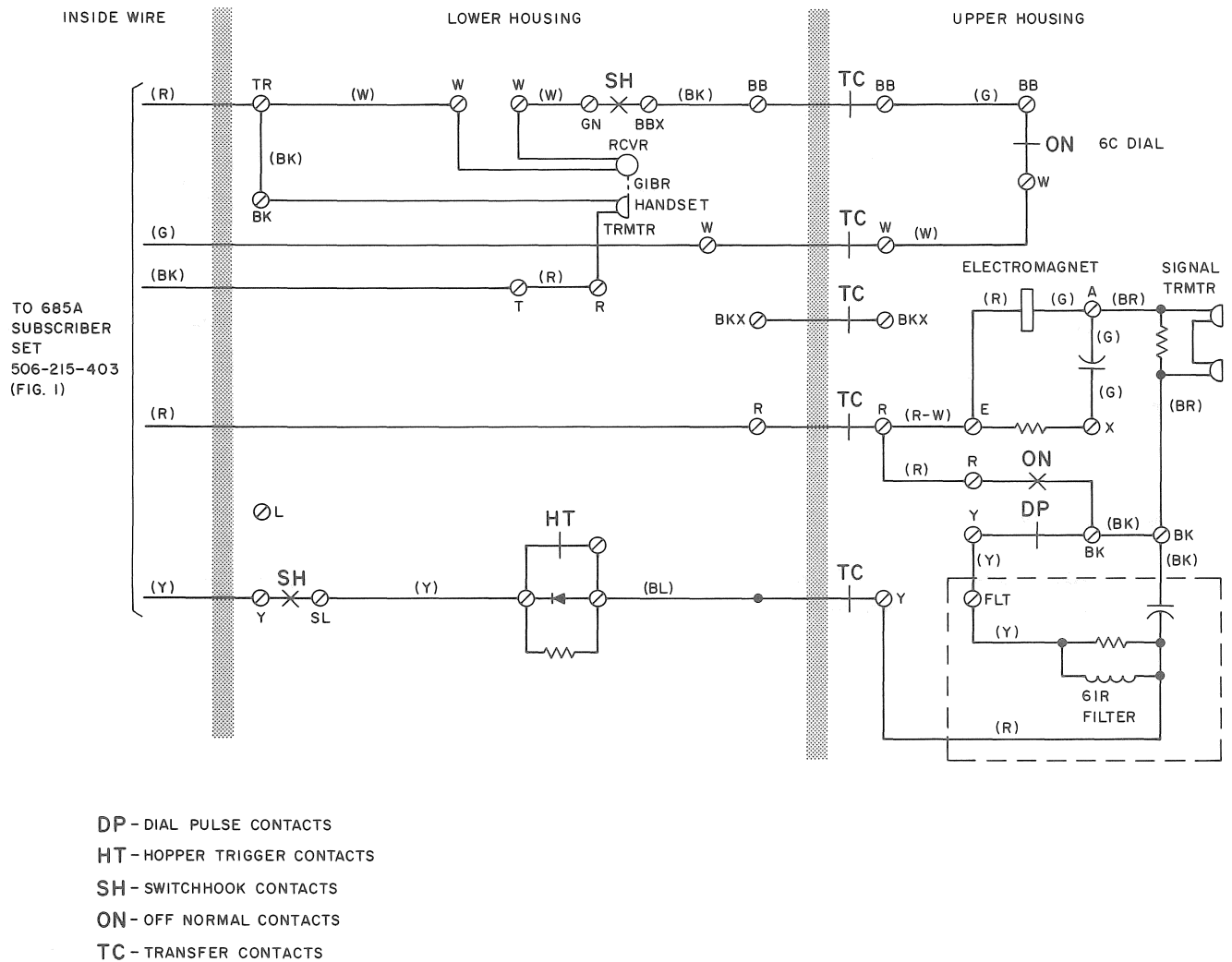
DP - DIAL PULSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS  
 DS - DIAL SHORTING CONTACTS

Fig. 9—191, 195, 196, 197, (CNT, DNT, GNT, and HNT) Coin Collector—Coin First, Connections



**Fig. 10—193G, H and 198G, H Coin Collectors with 531A; 534DE, DF; 584DE, DF; or 687A Subscriber Sets—Postpay, Connections**





**Fig. 11—193GN, HN and 198GN, HN Coin Collectors—Postpay, Connections**

# SERVICE

## COIN COLLECTORS, SUBSCRIBER SET REQUIRED

### 200 AND 210 SERIES

#### 1. GENERAL

- Delete information on the 685A subscriber set

**1.01** This section provides connection information for the 200- and 210-type coin collectors and associated subscriber sets.

**1.03** Refer to Section 506-215-403 for connection information on the 685A subscriber set.

**1.02** This section is reissued to:

- Rearrange drawings to be consistent with other practices

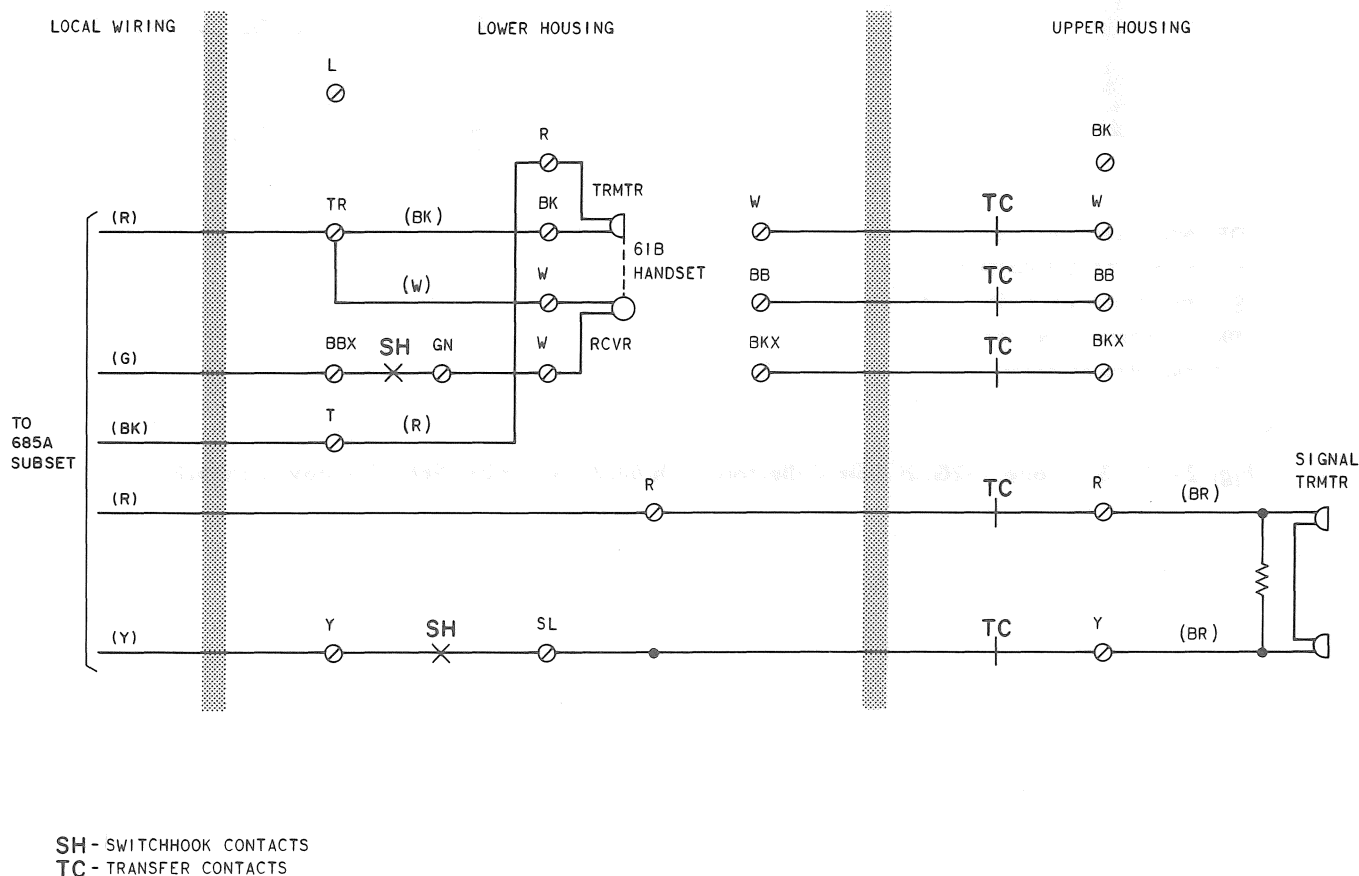
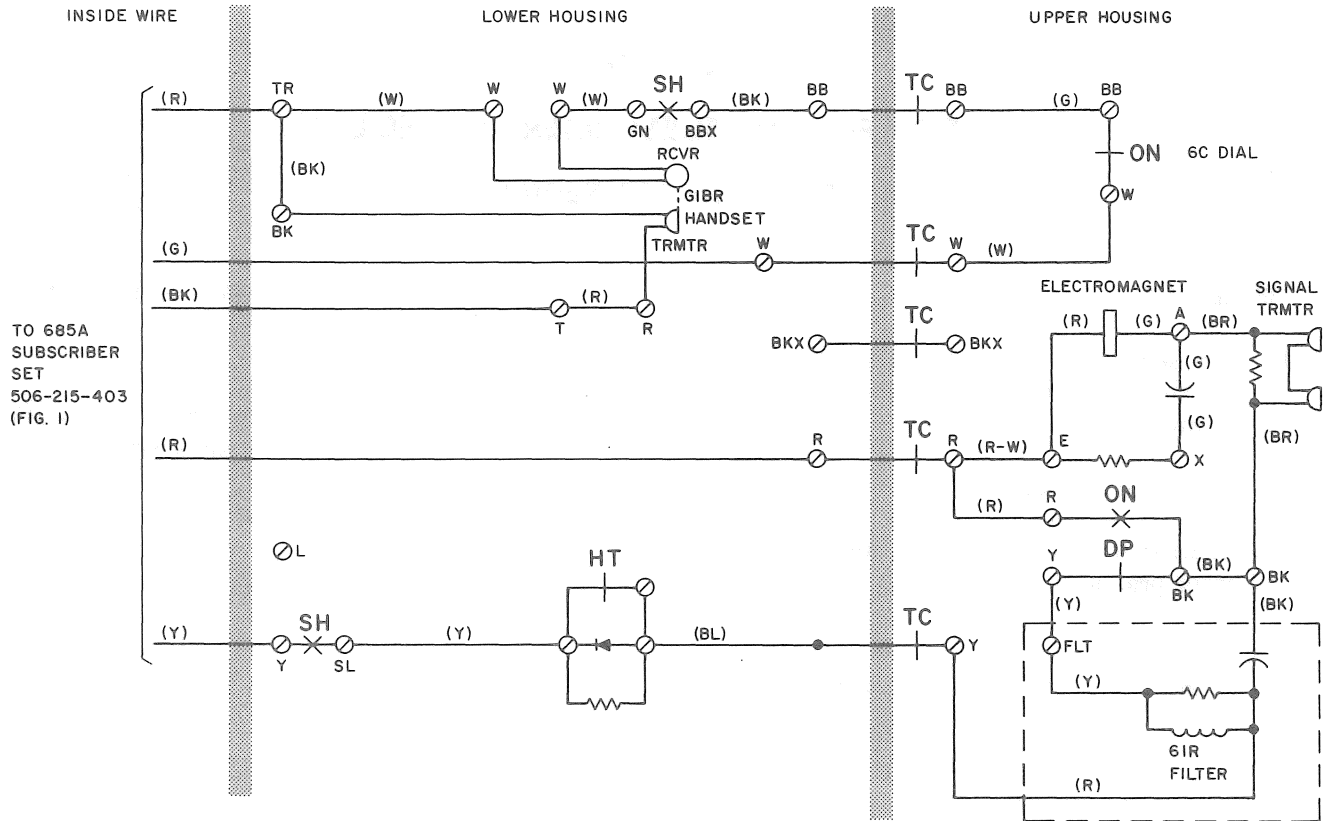


Fig. 1—200C and D Coin Collectors with 685A Subscriber Set—Postpay, Connections

# SECTION 506-330-405



DP - DIAL PULSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS

Fig. 2—210G, H, and 212G, H Coin Collectors with 685A Subscriber Set—Postpay, Connections

**SERVICE**  
**COIN COLLECTORS, SUBSCRIBER SET REQUIRED**  
**220 SERIES**

**1. GENERAL**

**1.01** This section provides connection information for the 220-type coin collectors.

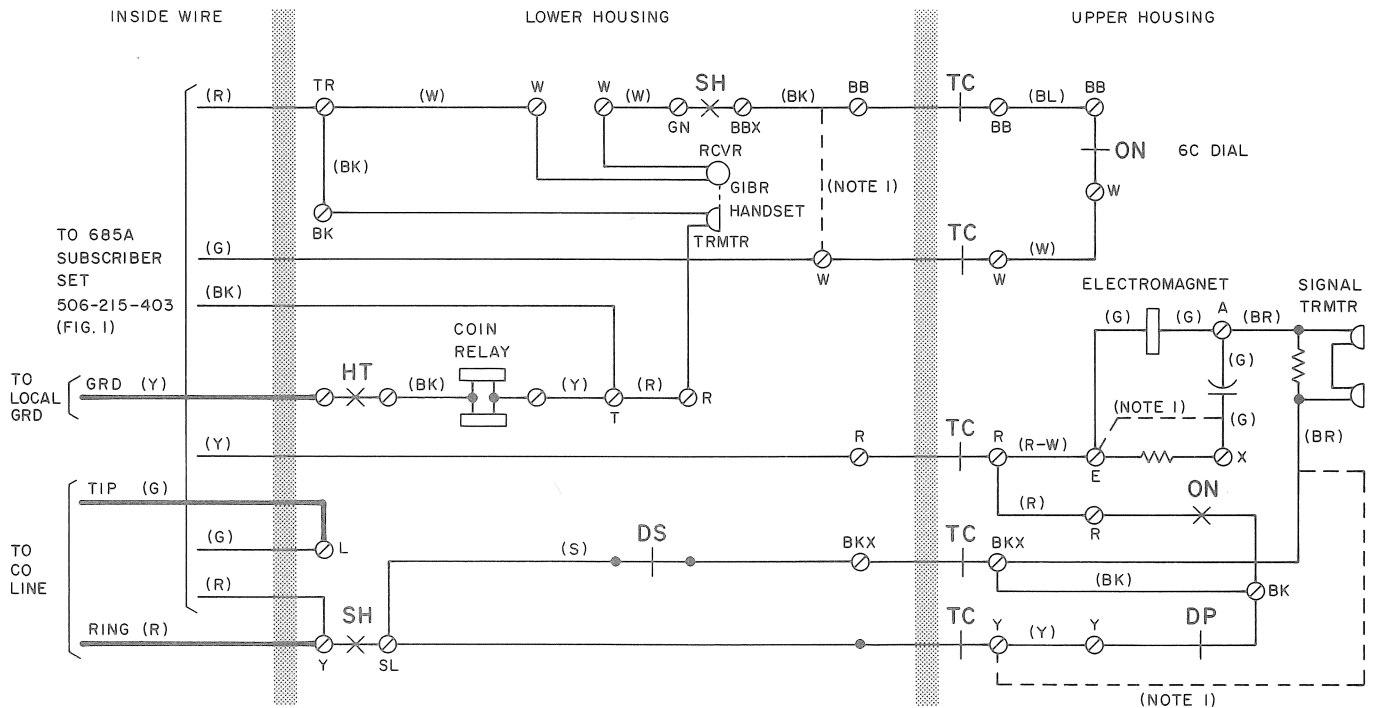
**1.02** This section is reissued to:

- Add a note, required when a 685B subscriber set is used with coin collector

- Rearrange drawings to be consistent with other practices

- Delete connection information for the 685A and B subscriber sets

**1.03** Refer to Section 506-215-404 for connection information for the 685A and B subscriber sets.



NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [220, 223 (C AND D)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A GIR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.

DP - DIAL PULSE CONTACTS  
HT - HOPPER TRIGGER CONTACTS  
SH - SWITCHHOOK CONTACTS  
ON - OFF NORMAL CONTACTS  
TC - TRANSFER CONTACTS  
DS - DIAL SHORTING CONTACTS

Fig. 1—220, 223 (C, D, G, H) Coin Collectors with 685A Subscriber Set—Coin First, Connections

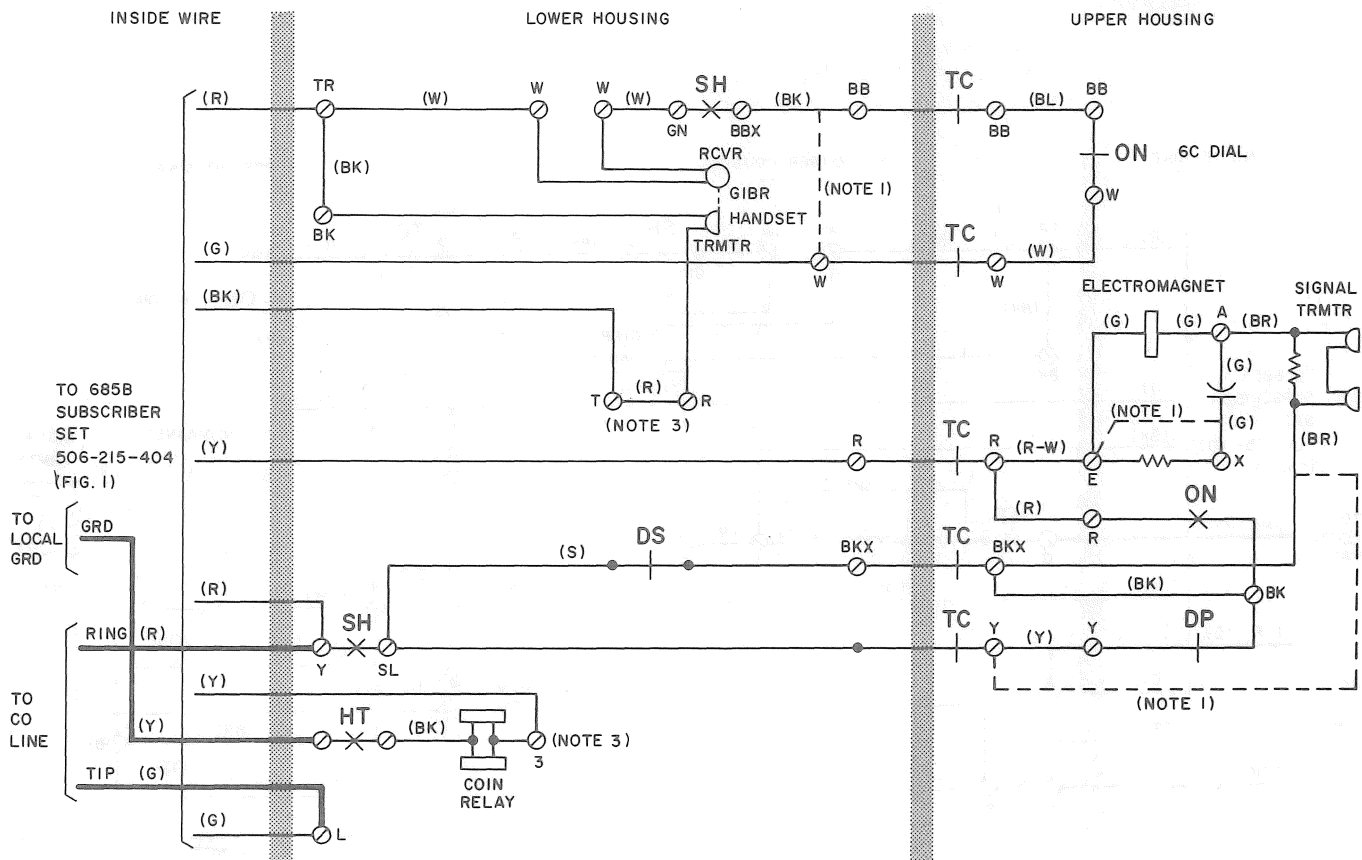
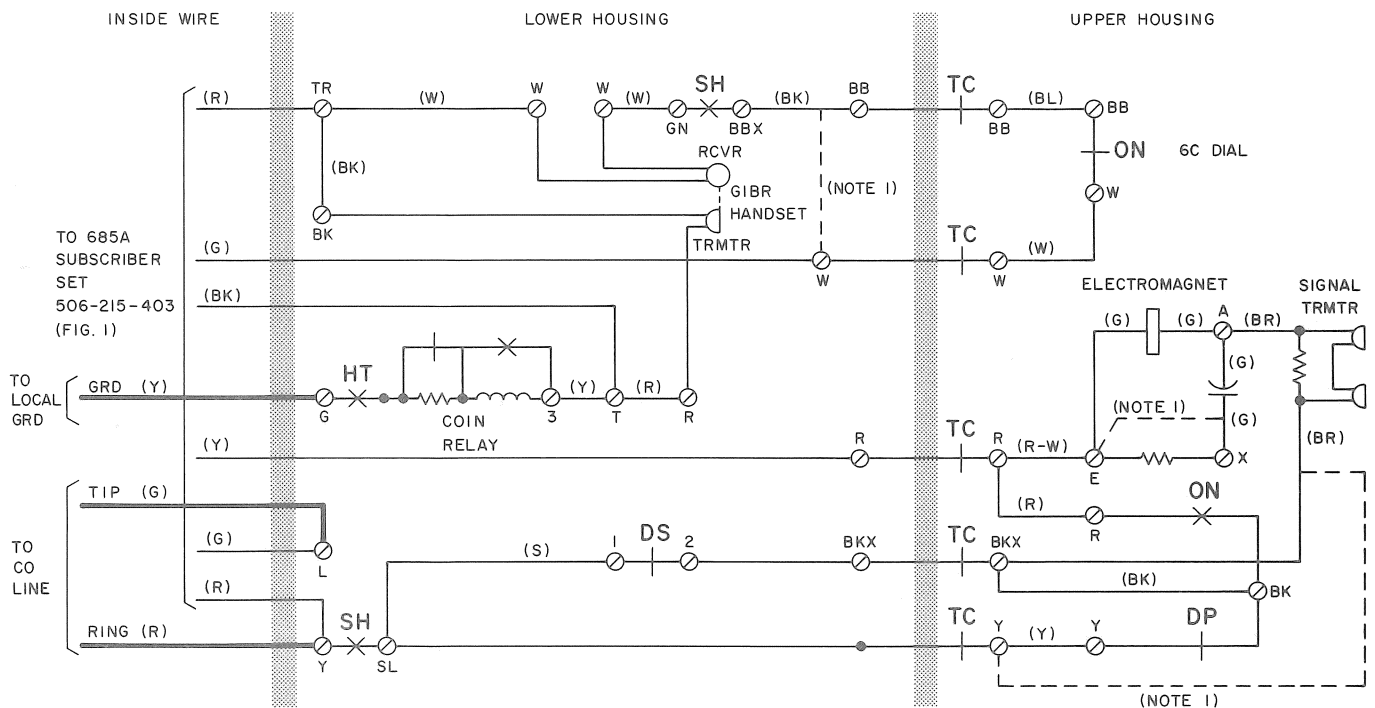


Fig. 2—220, 223 (C, D, G, H) Coin Collectors with 685B Subscriber Set—Coin First, Connections

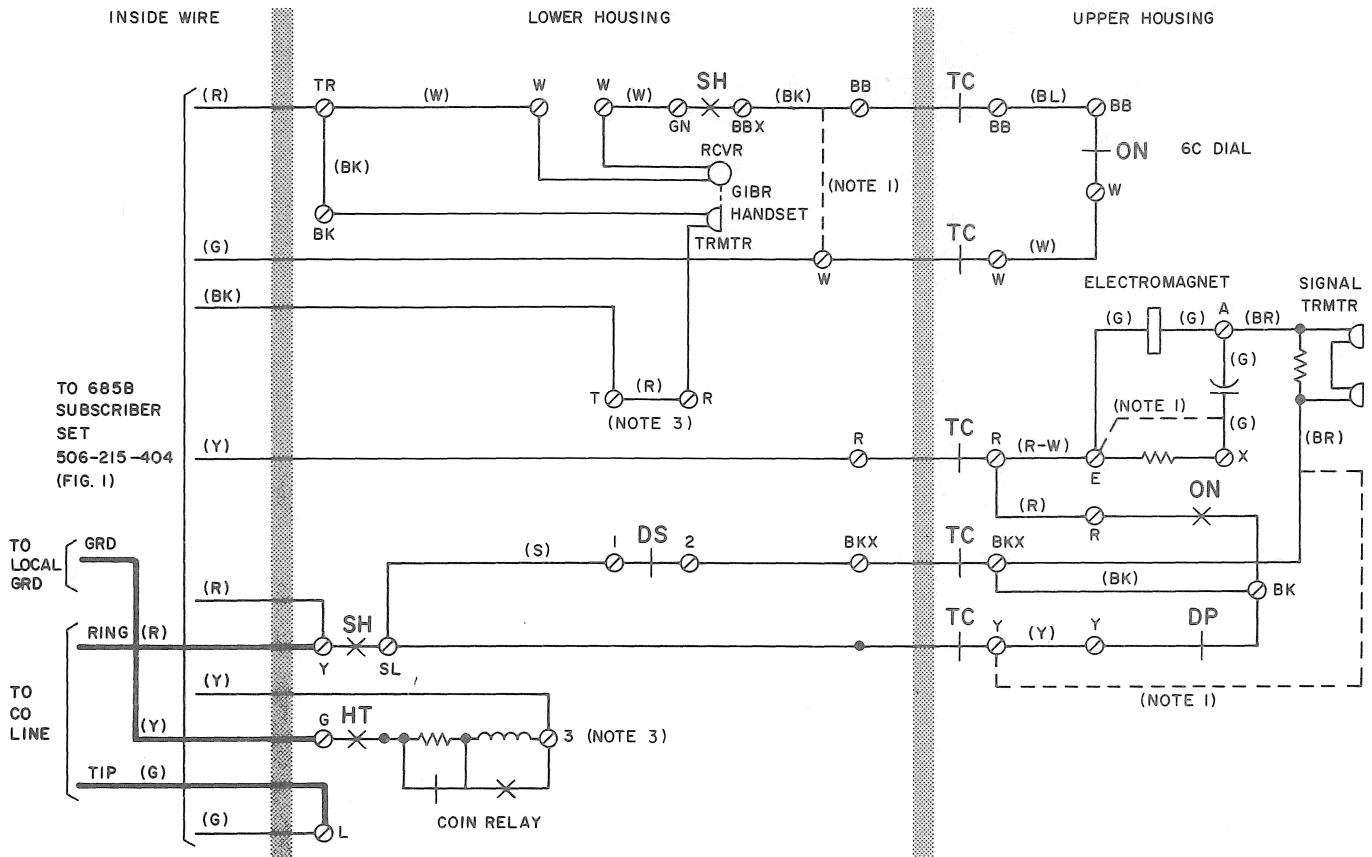


NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [220, 223 (CT AND DT)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A 6IR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. WHEN COIN COLLECTOR IS INSTALLED IN A KS-14611, LIST 2 BOOTH OF A KS-16705 MOUNTING, THE TIP AND RING LINE TERMINATIONS ARE CONNECTED DIRECTLY TO THE SUBSCRIBER SET.

DP - DIAL PULSE CONTACTS  
HT - HOPPER TRIGGER CONTACTS  
SH - SWITCHHOOK CONTACTS  
ON - OFF NORMAL CONTACTS  
TC - TRANSFER CONTACTS  
DS - DIAL SHORTING CONTACTS

**Fig. 3—220, 223, (CT, DT, GT, HT) Coin Collectors with 685A Subscriber Set—Coin First, Connections**



## NOTES:

1. DOTTED LINES SHOW SETS WITH MANUAL CONNECTIONS [220, 223 (CT AND DT)] DIAL IS REPLACED WITH 50C APPARATUS BLANK.
2. WHEN A GIR FILTER IS REQUIRED FOR RADIO FREQUENCY SUPPRESSION, MOVE (Y) DIAL LEAD FROM Y UPPER HOUSING CONTACT SPRING TO FILTER BRACKET TERM., CONNECT (Y) FILTER LEAD TO FILTER BRACKET TERM., CONNECT (BK) FILTER LEAD TO BK UPPER HOUSING CONTACT, AND CONNECT (R) FILTER LEAD TO Y UPPER HOUSING CONTACT.
3. REMOVE THE (Y) STRAP BETWEEN TERMINALS 3 AND T WHEN USED WITH THE 685B SUBSCRIBERS SET.

DP - DIAL PULSE CONTACTS  
 HT - HOPPER TRIGGER CONTACTS  
 SH - SWITCHHOOK CONTACTS  
 ON - OFF NORMAL CONTACTS  
 TC - TRANSFER CONTACTS  
 DS - DIAL SHORTING CONTACTS

Fig. 4—220, 223 (CT, DT, GT, HT) Coin Collectors with 685B Subscriber Set—Coin First, Connections





**SERVICE**  
**COIN COLLECTORS, SUBSCRIBER SET REQUIRED**  
**230 SERIES**

**1. GENERAL**

**1.01** This section provides connection information for the 230-type coin collectors.

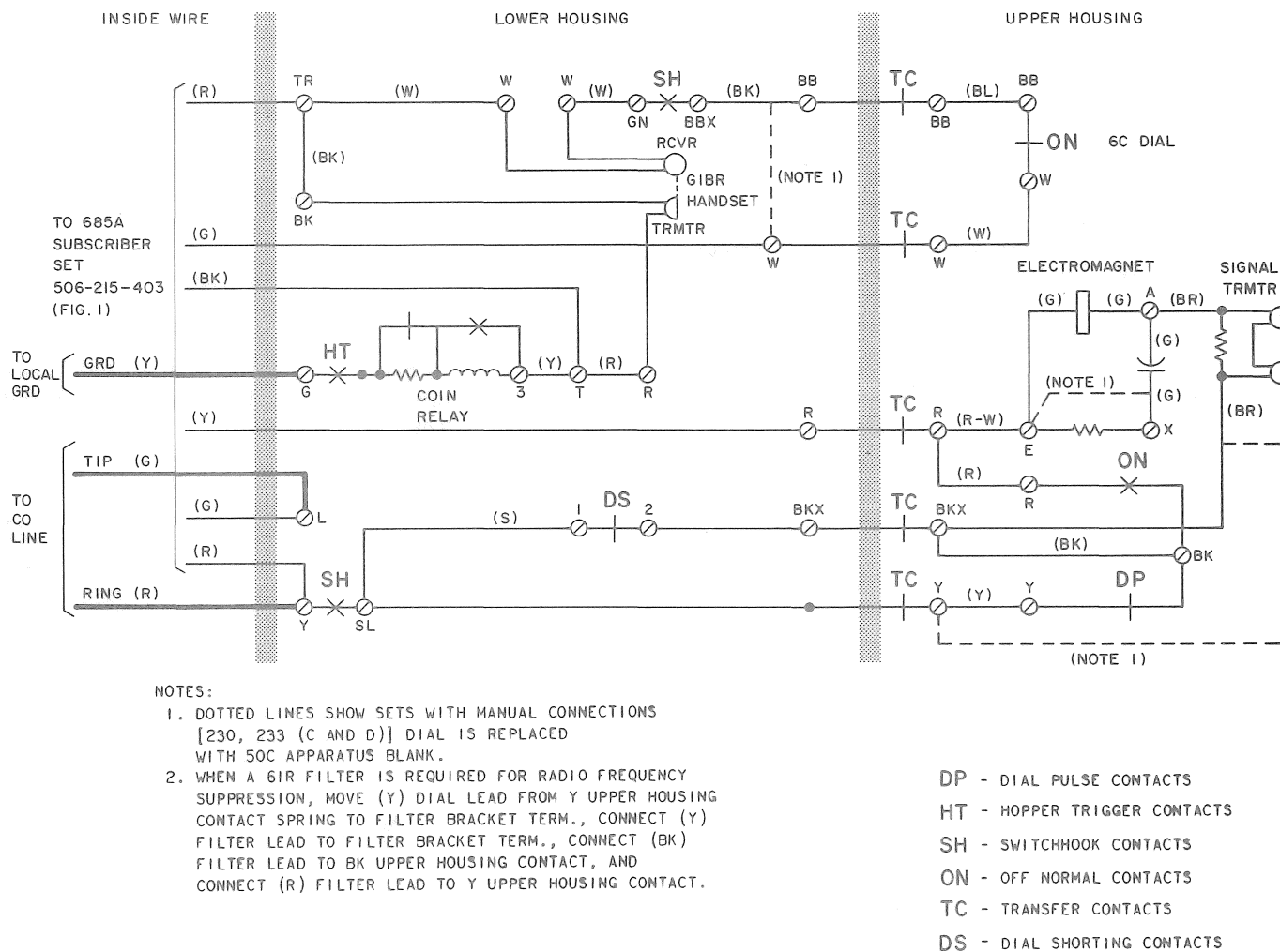
**1.02** This section is reissued:

- Add a note, required when a 685B subscriber set is used with a coin collector

- Rearrange drawings to be consistent with other practices

- Delete connection information for the 685A and B subscriber sets

**1.03** Refer to Sections 506-215-403 and 506-215-404 for connection information for the 685A and B subscriber sets.



**Fig. 1—230, 233 (C, D, G, H) and 234G Coin Collectors with 685A Subscriber Set—Coin First, Connections**

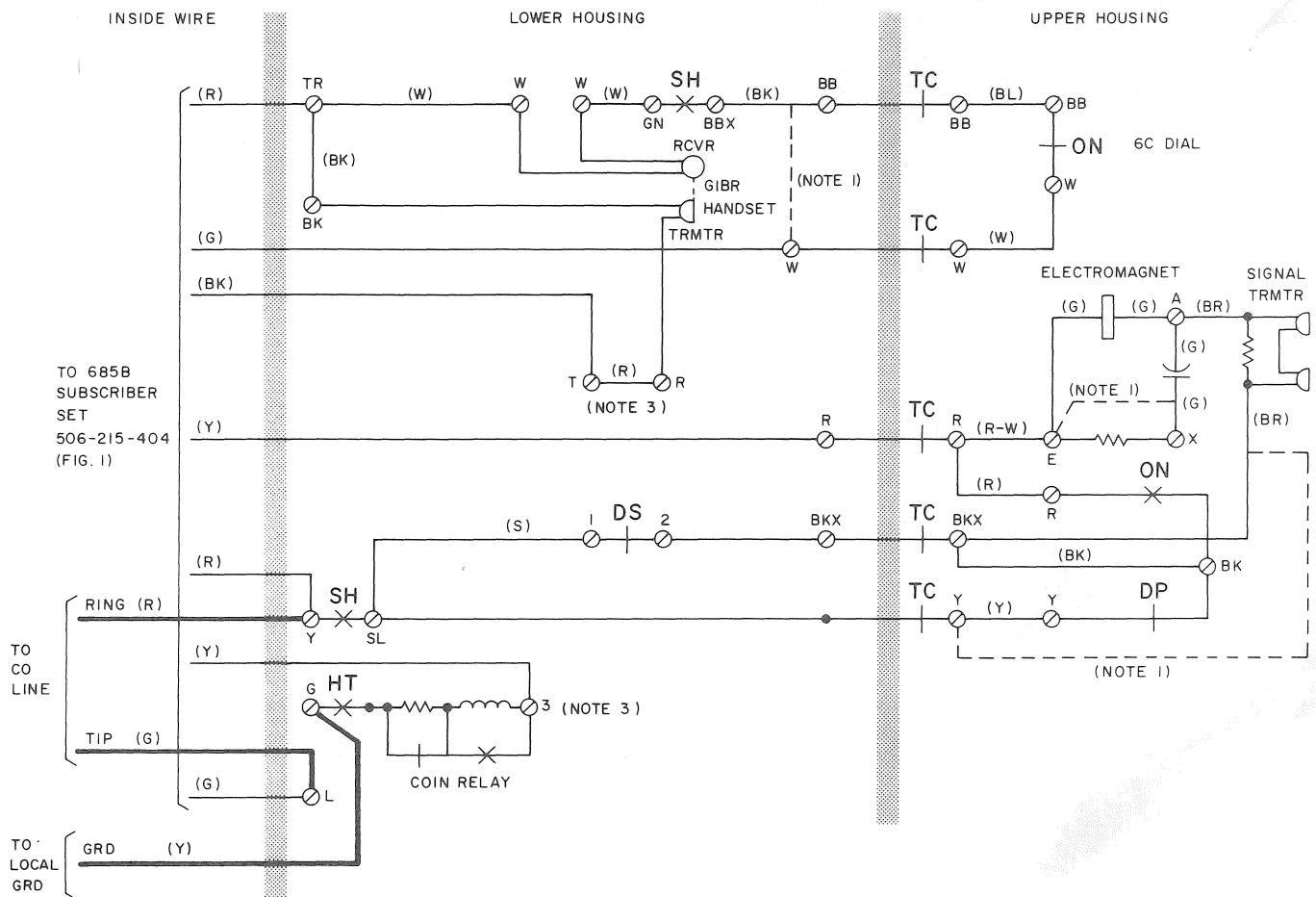


Fig. 2—230, 233 (C, D, G, H) and 234G Coin Collectors with 685B Subscriber Set—Coin First, Connections



**SERVICE**  
**COIN COLLECTORS, SUBSCRIBER SET REQUIRED**  
**1230 SERIES**

**1. GENERAL**

**1.01** This section provides connection information for the 1234 coin collector.

**1.02** This section is reissued:

- Rearrange drawing to be consistent with other practices

- Incorporate minor changes in drawing

- Delete connection information for the 685A subscriber set

**1.03** Refer to Section 506-215-403 for connection information on the 685A subscriber set.

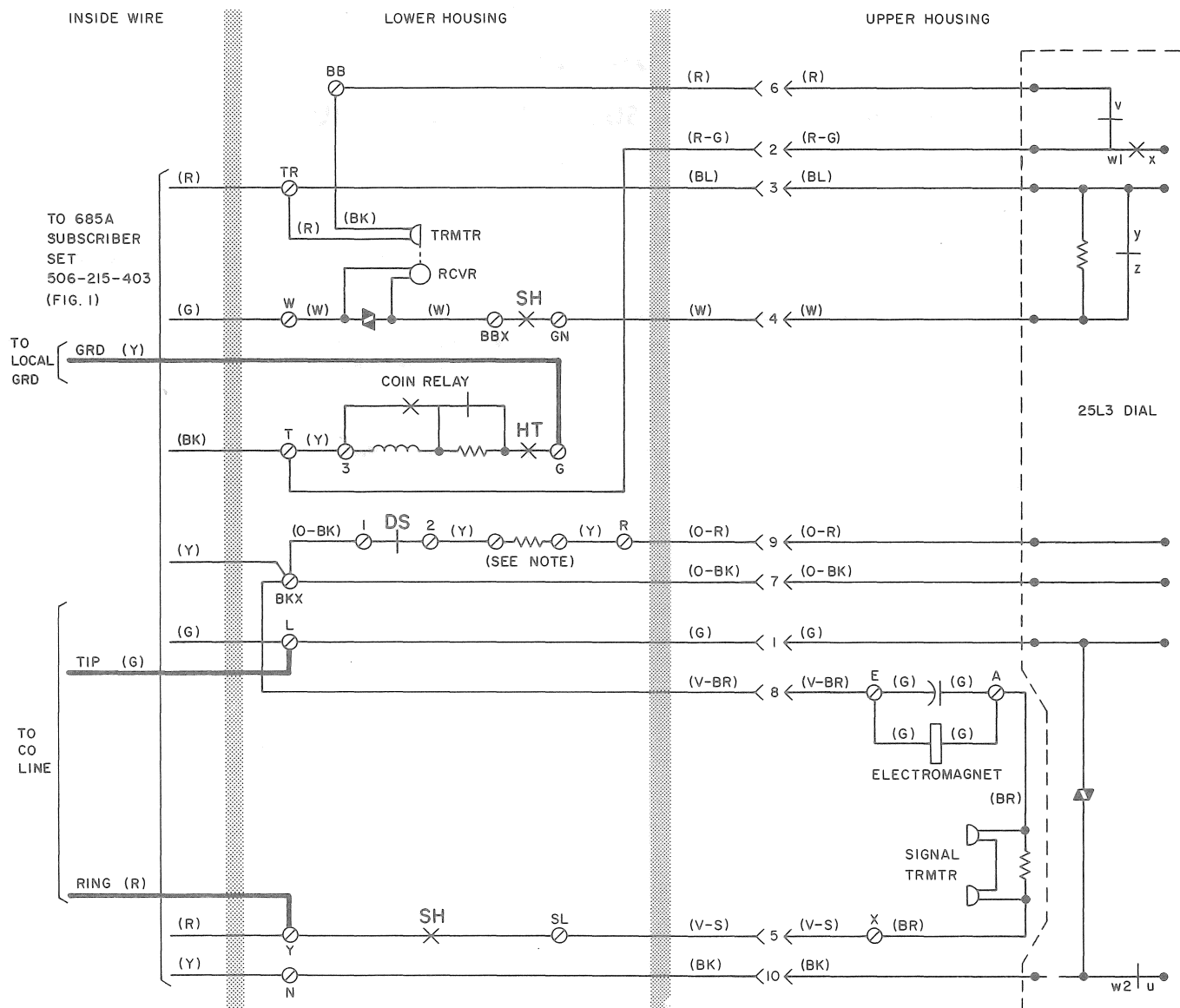


Fig. 1—1234G Coin Collector with 685A Subscriber Set—Coin First, Connections

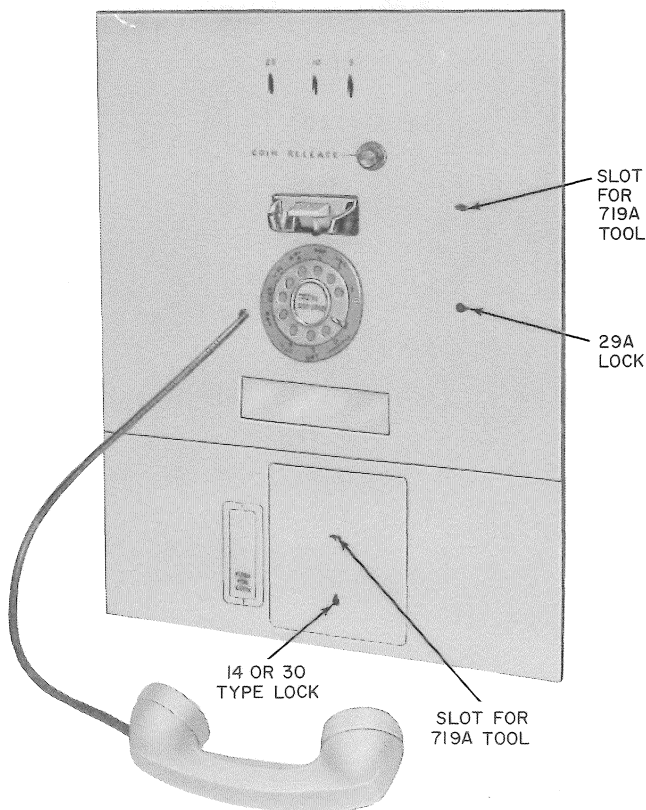
## SERVICE

### COIN COLLECTORS

#### 235- AND 1235-TYPE

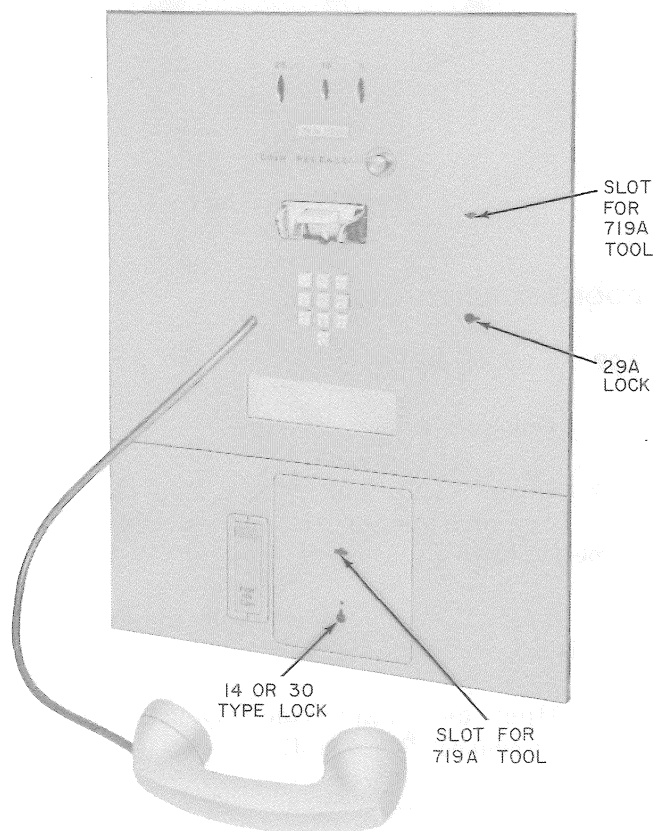
#### 1. GENERAL

**1.01** This section provides maintenance and connection information for the 235G and 1235G coin collectors. (Fig. 1 and 2).



**Fig. 1—235G Coin Collector**

**1.02** Information in this section was formerly contained in Sections 506-321-100, 506-321-400 and 506-321-420 which are hereby canceled.



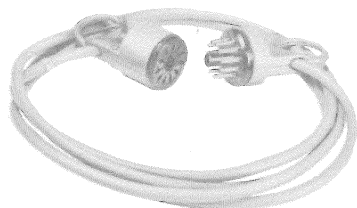
**Fig. 2—1235G Coin Collector**

**1.03** For additional information refer to Division 506, section entitled: Reference Coin Collectors, 235-, 236-, and 1235-Type.

#### 2. MAINTENANCE

**2.01** A P11C test cord (Fig. 3) is used to connect plug (P1) to jack (J1) which allows the set to be operative while door and liner assembly is opened.





**Fig. 3—P11C Test Cord**

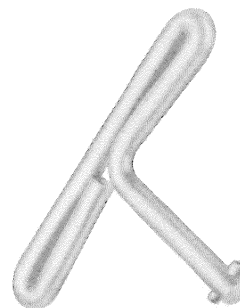
## **DOOR AND LINER ASSEMBLY**

**2.02** To open door:

- (1) Unlock 29A lock.
- (2) Insert 719A tool (Fig. 4) into slot, turn 1/4-turn clockwise, and release locking mechanism.

**Note:** Do not open door fully until plug (P1) is disconnected (Fig. 5).

- (3) Open door approximately 3 inches and disconnect P1 from J1.
- (4) Door can now be fully opened.



**Fig. 4—719A Tool**

## ***Coin Twister Assembly***

**2.03** To remove coin twister assembly:

- (1) Loosen screws in middle of twister assembly (Fig. 5).
- (2) Lift P-27E847 coin twister (top section) up and out.
- (3) Remove screws and nuts holding P-44E390 coin twister frame assembly (Fig. 5).
- (4) Lift frame assembly up and off.
- (5) Install, using reverse procedure.

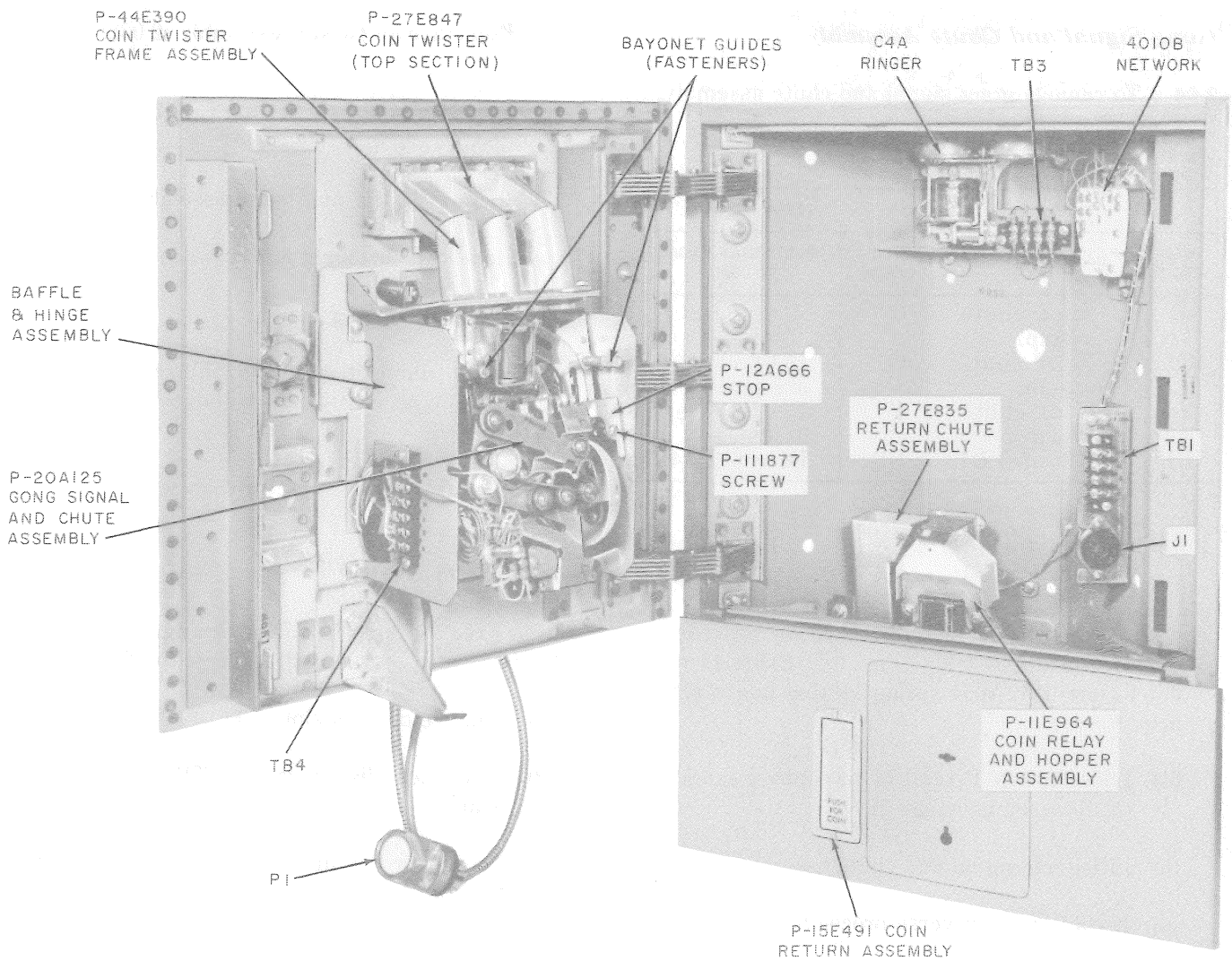


Fig. 5—235G or 1235G Coin Collector—Interior

**Gong Signal and Chute Assembly**

**2.04** To remove gong signal and chute assembly:

- (1) Disconnect wires as follows:

235G		1235G	
WIRE COLOR	DISCONNECT FROM TERM.	WIRE COLOR	DISCONNECT FROM TERM.
G	A of chute assem.	G	A of chute assem.
G	X of chute assem.	G	E of chute assem.
Y	E of chute assem.	Y	E of chute assem.
BR	BR of TB4	BR	BR of TB4

- (2) Remove P-111877 screw and P-12A666 stop (Fig. 5)
- (3) Loosen P-25E445 screw in lower left corner of chute assembly (Fig. 6). Exercise care not to lose P-12A681 spring located under screw head.
- (4) Loosen two P-11E183 bayonet guides on chute assembly (Fig. 5).
- (5) Lift gong signal and chute assembly off.
- (6) Install, using reverse procedure.

**Baffle and Hinge Assembly**

**2.05** To remove baffle and hinge assembly (Fig. 5):

- (1) Disconnect all wires from TB4
- (2) Remove retainer ring from rear of the coin release shaft.
- (3) Remove four P-181641 screws, four P-285080 lockwashers and lift baffle and hinge assembly off.
- (4) Install, using reverse procedure.

**Dial and Housing Assembly**

**2.06** To remove dial housing:

- (1) Remove coin twister assembly (2.03).
- (2) Remove gong signal and chute assembly (2.04).
- (3) Remove baffle and hinge assembly (2.05).
- (4) Remove four mounting screws in dial housing.
- (5) Lift dial housing off.
- Note:** Handset cord will pull through cover to enable access to dial without disconnecting cord.
- (6) Install, using reverse procedure.

**2.07** To remove dial:

**Note:** No field maintenance should be performed on the dial, replace if defective.

- (1) Remove dial housing (2.06).
- (2) Disconnect dial leads from TB2 (dial terminal board).
- (3) Loosen two mounting screws on sides of dial through access holes in dial housing.
- (4) Lift dial off.

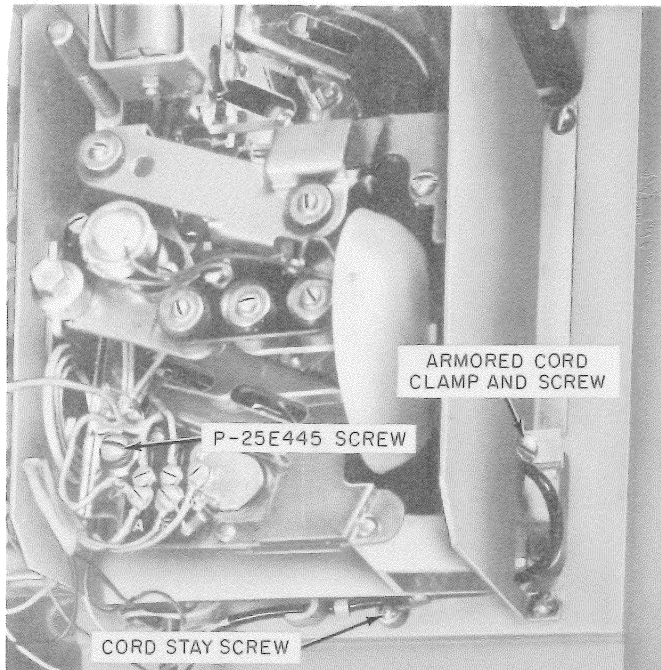
**2.08** To install dial:

- (1) Use reverse procedure in 2.07 and make connections as follows:

235G		1235G	
WIRE COLOR	CONNECT TO	WIRE COLOR	CONNECT TO
Y	TB2-1	G	TB2-1
W	TB2-2	W	TB2-2
G	TB2-2	BL	TB2-3
BL	TB2-3	O-BK	TB2-4
W	TB2-9	R	TB2-5
Y	TB2-11	R-G	TB2-6
		O-R	TB2-8
		BK	TB2-11

**Handset****2.09** To remove handset:

- (1) Remove gong signal and chute assembly (2.04).
- (2) Disconnect handset leads from TB4.
- (3) Loosen cord stay screw (Fig. 6).
- (4) Remove screw and cord clamp from armored cord.
- (5) Pull cord out front of cover.
- (6) Install, using reverse procedure.

**Fig. 6—Location of Cord Stay Screw and Cord Clamp****HOUSING ASSEMBLY****Ringer****2.10** To remove ringer:

- (1) Disconnect ringer leads from TB3.
- (2) Remove two screws.

- (3) Lift ringer up and off.

**2.11** To install ringer:

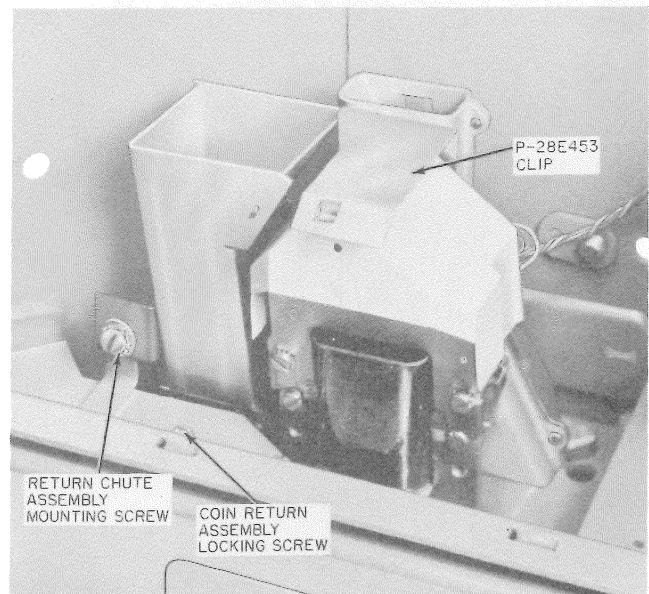
- (1) Mount ringer in place and secure with two screws.
- (2) Connect ringer leads as follows:

WIRE COLOR	CONNECT TO
BK	TB3-R
R	TB3-T
S-R	TB3-A
S	TB3-K

**Return Chute Assembly****2.12** To remove return chute assembly (Fig. 7):

- (1) Loosen mounting screw.
- (2) Lift assembly up and out.

**Note:** It may be necessary to remove P-28E453 clip.

**Fig. 7—Coin Relay and Return Chute Assembly**

**2.13** To install return chute assembly:

- (1) Slide the assembly in and down until it is properly seated.
- (2) Tighten the mounting screw.



*If the return chute is not installed properly, there can be a gap between the return chute and the hopper assembly large enough to allow coins to drop into the housing. Refer to Fig. 8 for this gap. This gap may be observed by placing a light down the opening in the return chute, tripping the relay and hopper assembly to the reject position, and looking down the opening of the hopper assembly. Fig. 9 is a bird's eye view of what can be observed. If this gap exists, loosen the mounting screw and reposition*

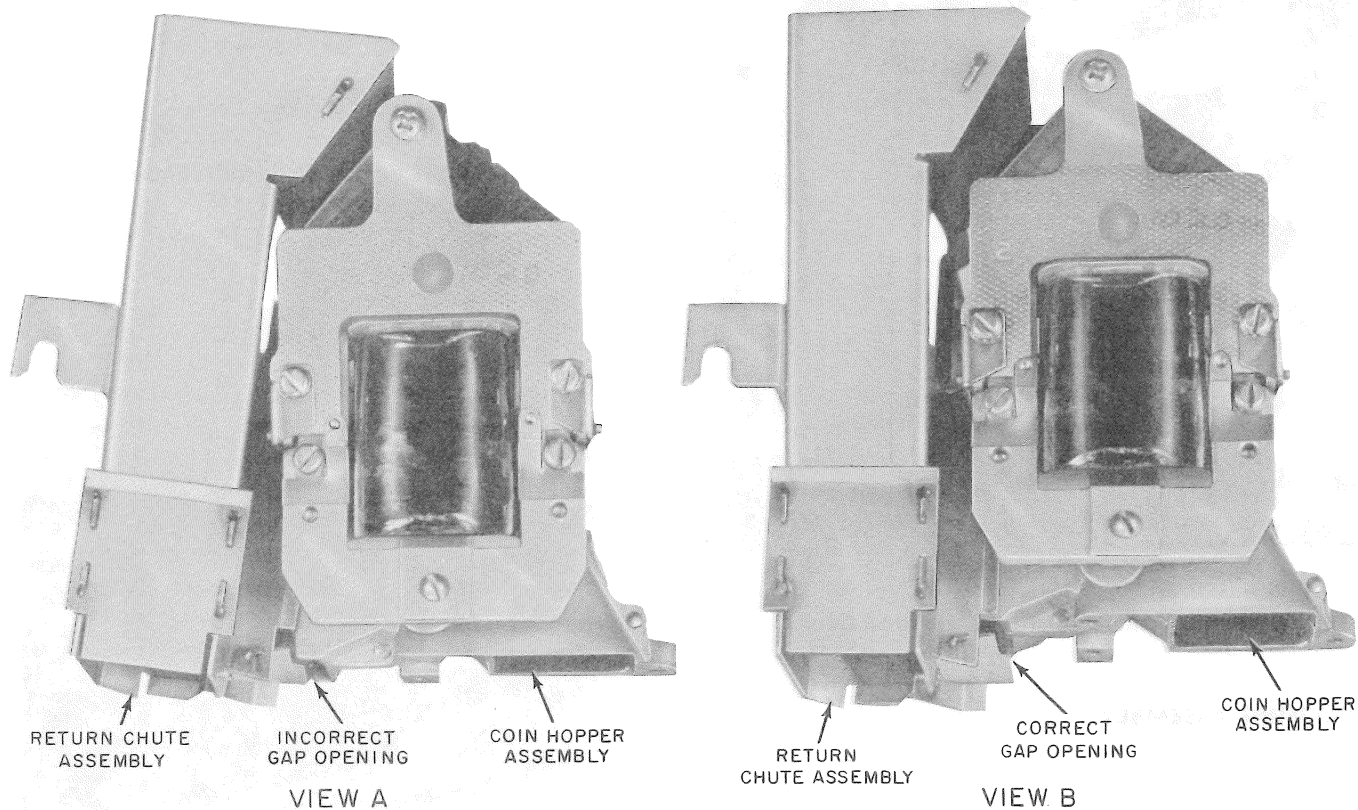
*the return chute. Check again with a light (Fig. 9) and tighten screw when proper alignment is obtained.*

**Coin Relay****2.14** To remove coin relay (Fig. 7):

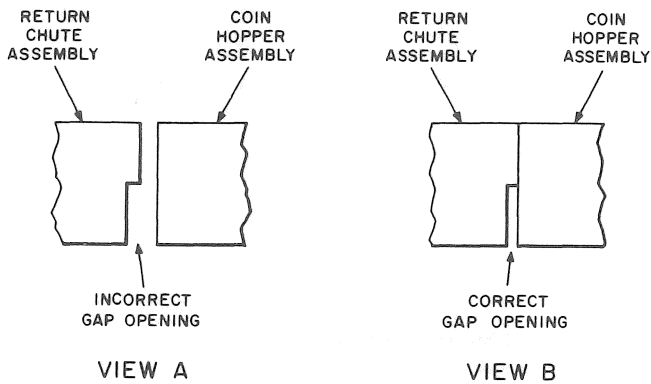
- (1) Remove return chute assembly (2.12).
- (2) Remove P-28E453 clip and dust cover.
- (3) Disconnect leads from coin relay.
- (4) Remove four screws and remove coin relay.

**2.15** To install coin relay:

- (1) Place coin relay in position and secure with the four screws removed in 2.14(4).



**Fig. 8—Alignment of Return Chute Assembly**



**Fig. 9—Relative Position of Return Chute Assembly and Coin Hopper Assembly As Viewed Down Hopper Throat**

- (2) Connect leads to coin relay as follows:

WIRE COLOR	CONNECT TO
R	1
R	2
G-Y	3
O	G

- (3) Install dust cover and P-28E453 clip (Fig. 7).
- (4) Install return chute assembly (2.12).

### *Coin Return Assembly*

- 2.16** To remove coin return assembly:

- (1) Remove return chute assembly (2.11).

- (2) Remove coin return assembly locking screw (Fig. 7).
- (3) Insert finger in coin return and tilt top forward.
- (4) Lift coin return. Pull coin return assembly out and up.

- 2.17** To install coin return assembly:

- (1) Tilt top of coin return assembly toward set.
- (2) Push coin return assembly into set.
- (3) Push in and down on bottom of coin return assembly until flush with front of housing.
- (4) Install coin return assembly locking screw. Tighten screw only enough to hold return assembly in place. Further tightening will bend screw.
- (5) Install return chute assembly (2.12).

### *Coin Hopper*

- 2.18** The coin hopper cannot be removed without removing 4A door and coin receptacle. If it becomes necessary to remove the coin hopper in the field, remove the 4A door and coin receptacle per local regulations.

## **3. CONNECTIONS**

- 3.01** For connection information refer to Fig. 10 and 11.

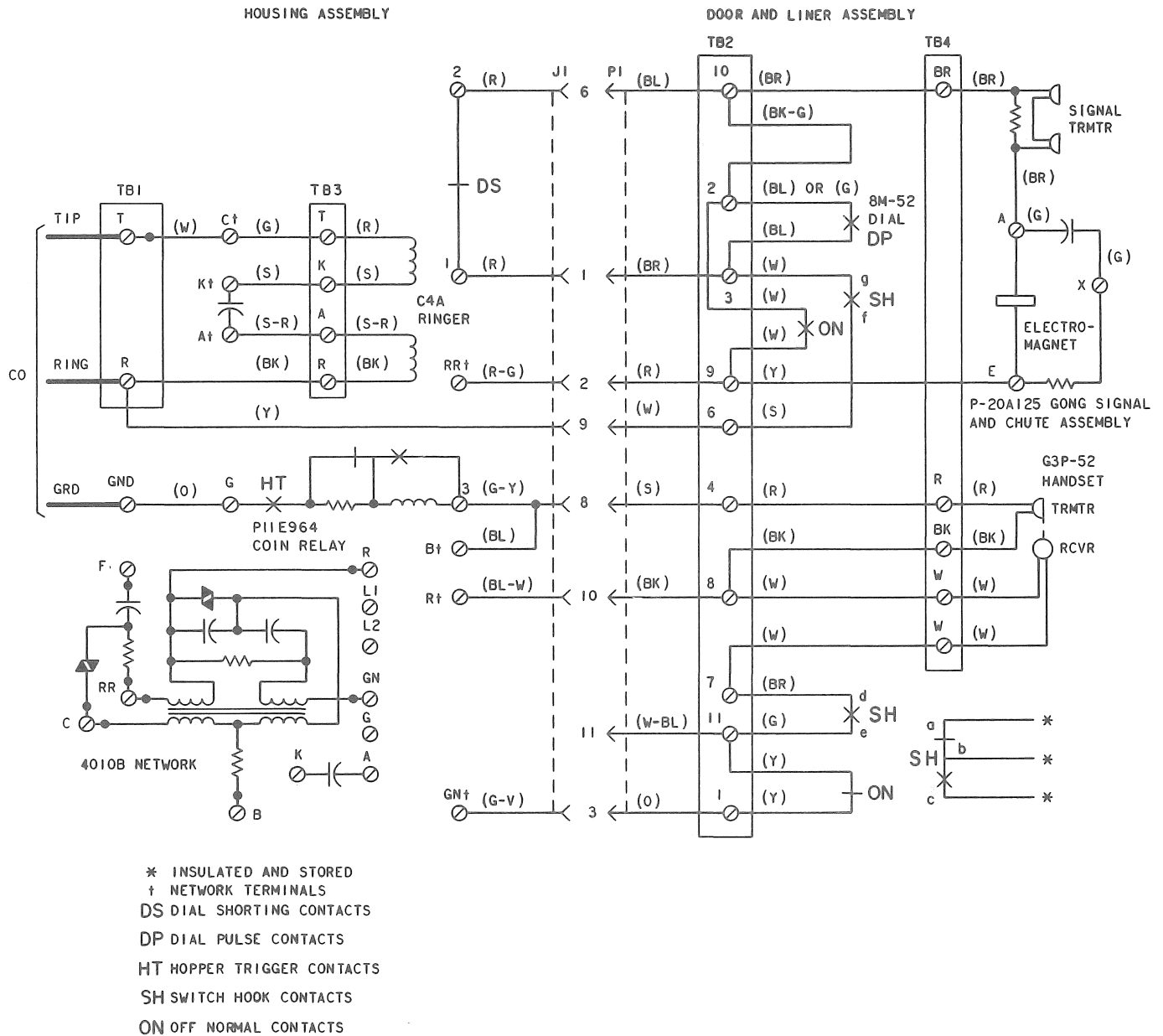


Fig. 10—235G Coin Collector, Connections

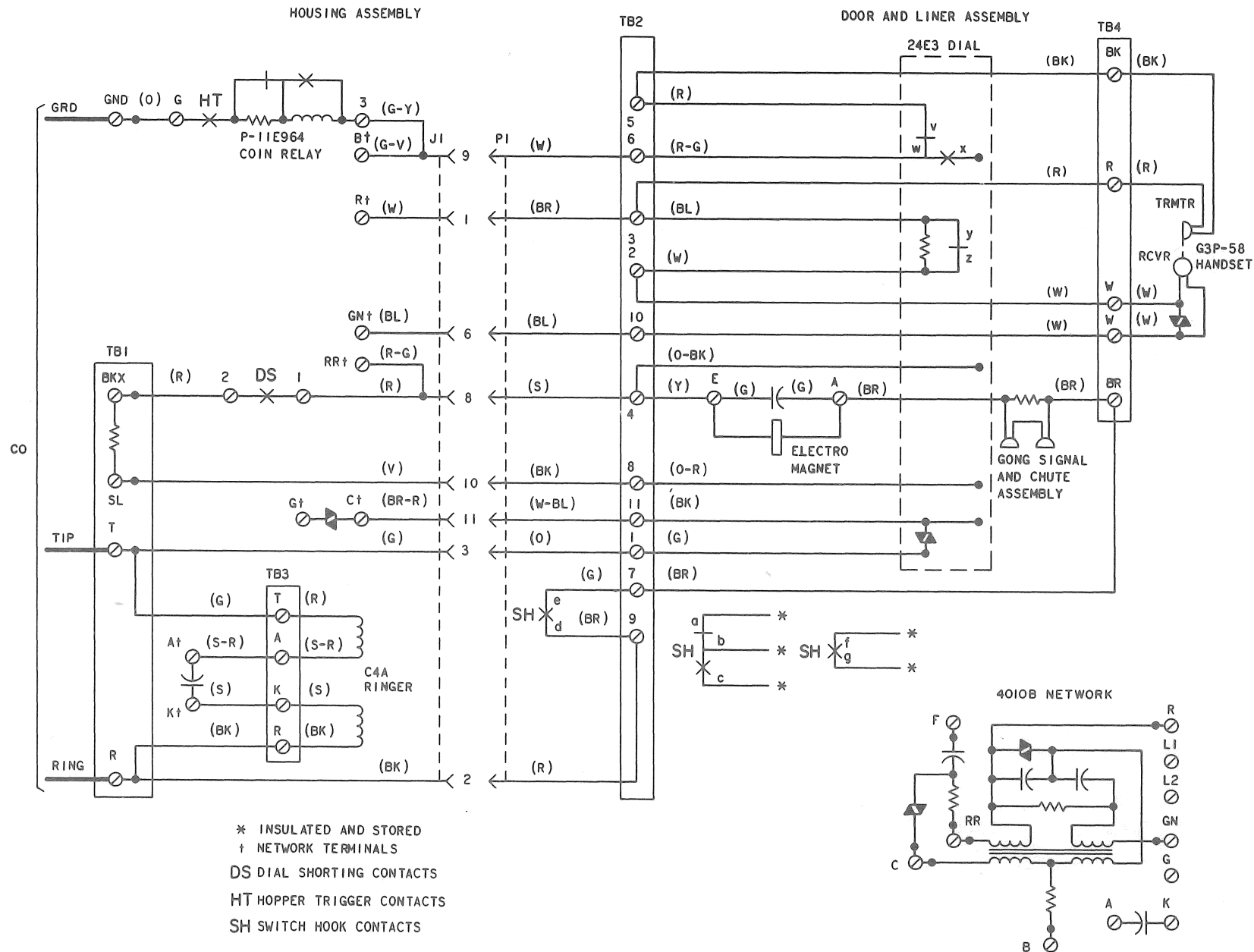


Fig. 11—1235G Coin Collector, Connections





**SERVICE**  
**COIN COLLECTORS**  
**236-TYPE**

**1. GENERAL**

**1.01** This section provides connection information for the 236G coin collector.

**1.02** Information in this section was formerly contained in Section 506-322-400 which is hereby canceled.

**1.03** Refer to Division 506, section entitled: Reference, Coin Collectors—235, 236-, and 1235- type for additional information on these sets.

**2. CONNECTION INDEX**

Fig. 1—236G Coin Collector, Connections

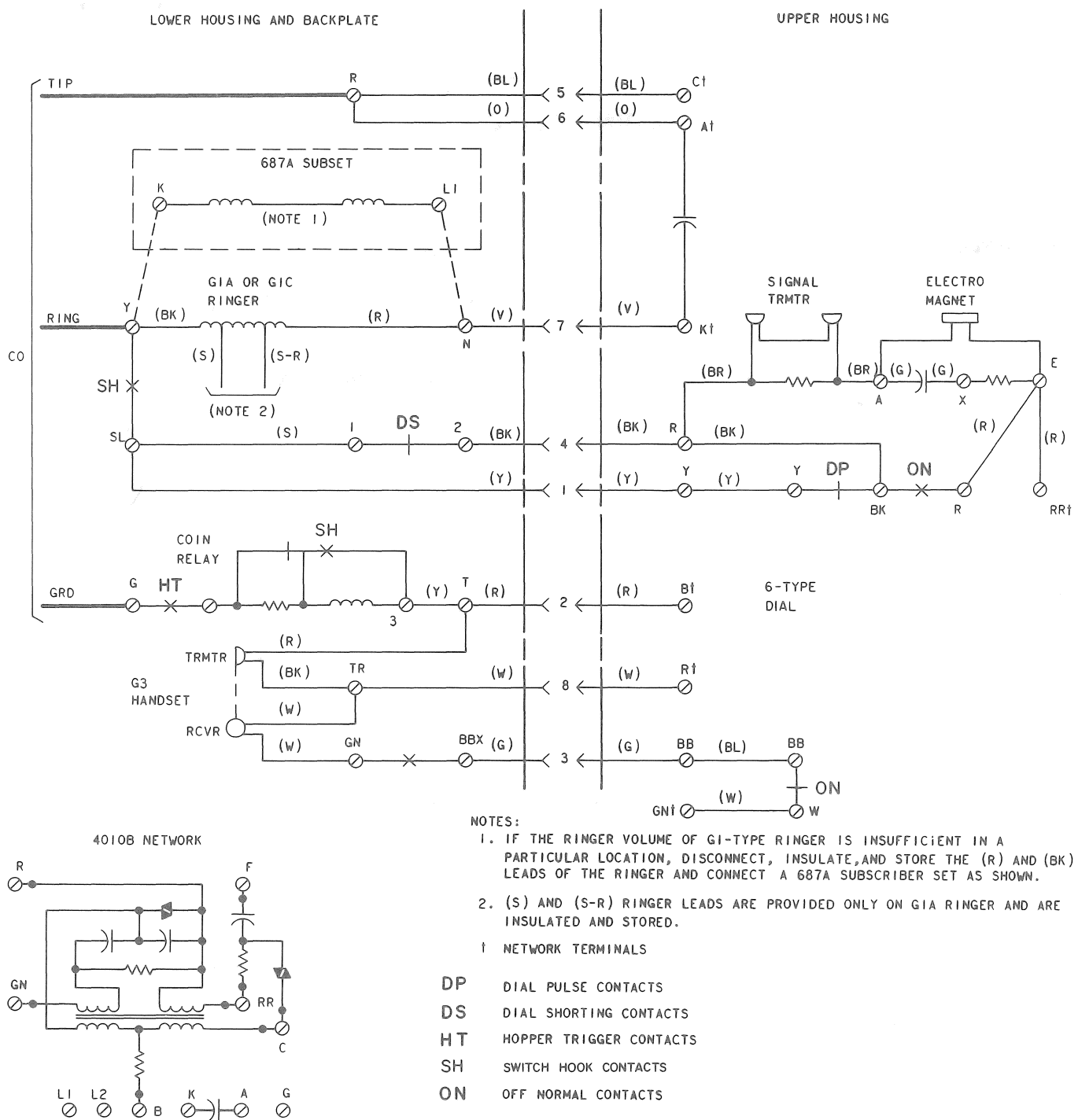


Fig. 1—236G Coin Collector, Connections

## SINGLE SLOT COIN TELEPHONE SETS INSTALLATION AND MAINTENANCE

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## 1. GENERAL

**1.01** This section is reissued to combine information on all single slot coin telephone sets (Fig. 1 through 5).

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

**1.02** Information on the 1C/2C-type sets was previously contained in Section 506-411-401.

**1.03** Information on the 1E-type sets was previously contained in Section 506-412-402.

**1.04** The 1A1 and 1C1 sets can be converted to 1A2 and 1C2 sets, respectively, by replacing the rotary dial-equipped P-90C800 or P-90E400 series cover unit assembly with a TOUCH-TONE® dial-equipped P-90E500 cover unit assembly. No wiring changes are necessary. No provision is made for converting a 2A1 or 2C1 set to a 2A2 or 2C2 set.

**1.05** Refer to Section 506-401-100, Issue 3, for replaceable components, color selection, and associated apparatus.

**1.06** All 1A/2A-Type sets are manufacture discontinued.

## 2. INSTALLATION

### LOCATION

**2.01** The 1-type coin telephone sets (Fig. 1 through 3) can be installed in/on the following:

- 178A-3 backboard

*Note:* Top edge of backboard should be 66 ±1/2 inches from floor.

- 10- and 11-type booths
- KS-14611 outdoor booth
- KS-16797 universal booth
- KS-19206 curved door booth
- KS-19267 coin telephone shelf
- KS-19340 wood booth
- KS-19425 indoor-outdoor booth
- KS-19426 walk-up, drive-up mounting
- KS-19580 outdoor booth
- KS-19945 shelf
- KS-20194 wedge shelf
- KS-20255 telephone kiosk
- KS-20842 mounting.

**2.02** The 2-type coin telephone set (Fig. 4 and 5) can be installed in the following:

- KS-19206 curved door booth
- KS-19340 wood booth
- KS-19426 walk-up, drive-up mounting
- KS-19442 deluxe glass booth
- KS-20194 wedge shelf
- KS-20630 booth
- A wall that will allow the phone to be recessed.

**2.03** Consider the following:

- Visibility, accessibility, and possible accident hazards in selecting locations.
- Mounting surfaces—Consult a supervisor before locating coin telephone set on finishes

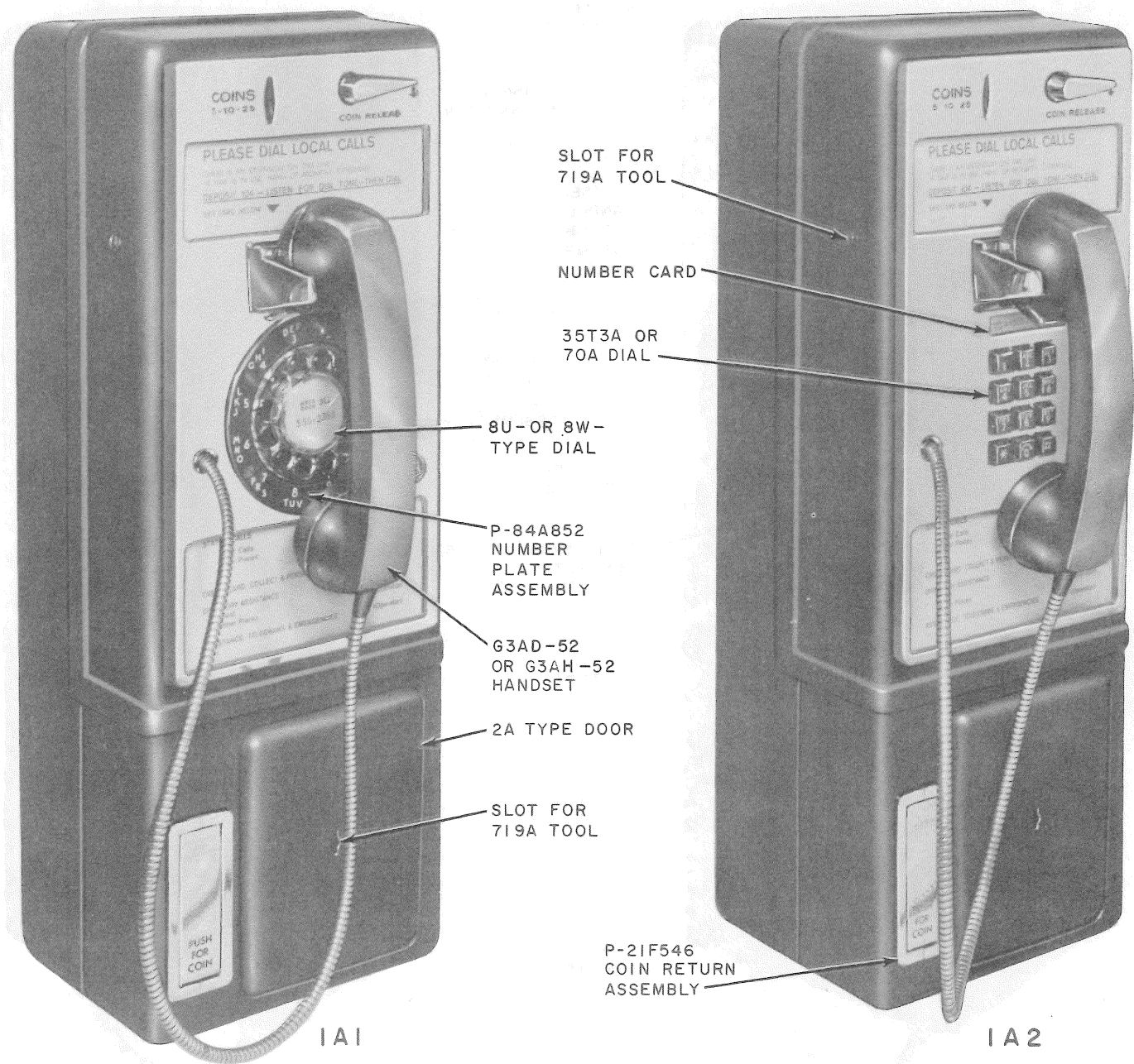


Fig. 1—1A-Type Coin Telephone Sets

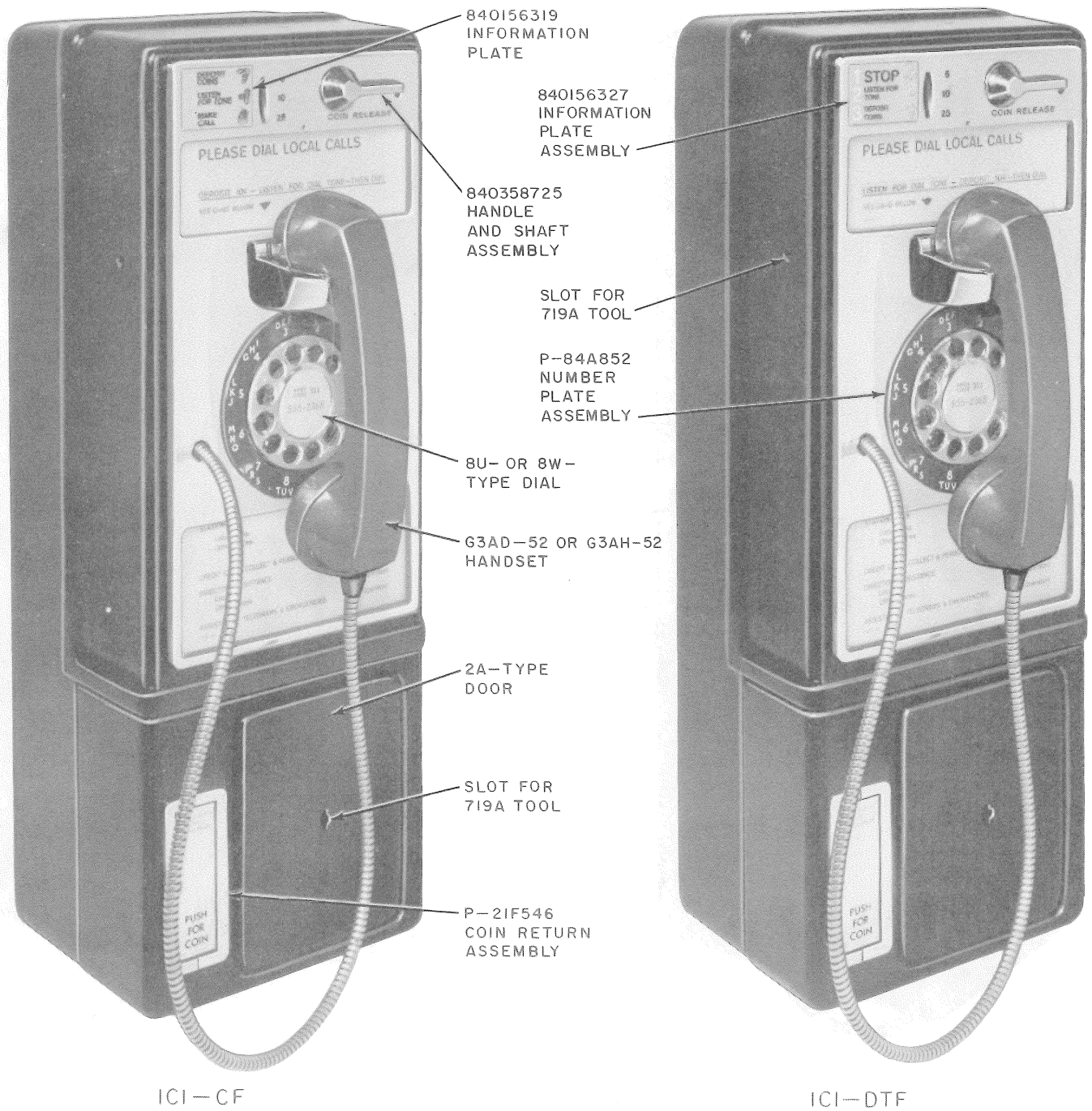
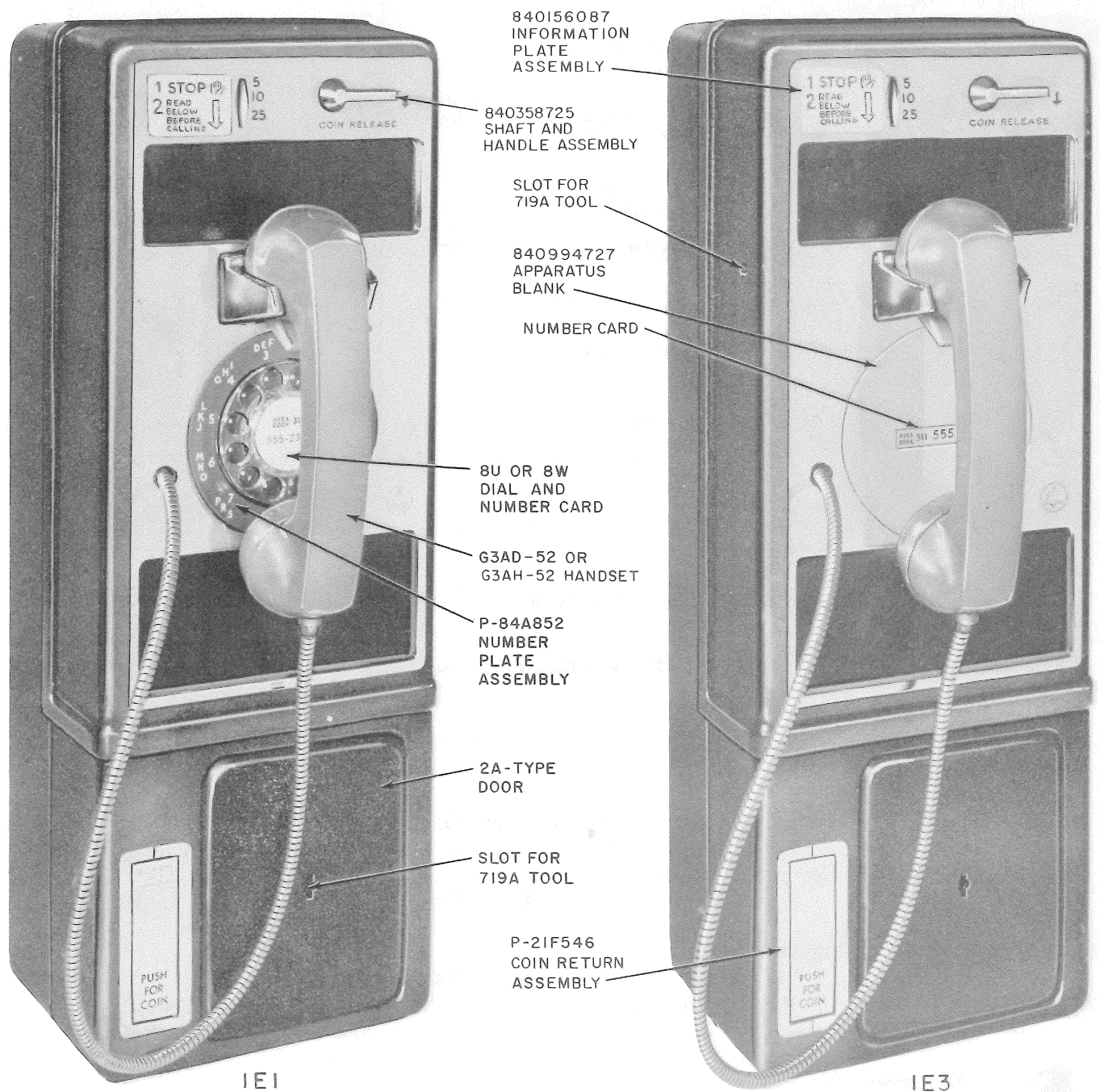


Fig. 2—IC-Type Coin Telephone Sets



**Fig. 3—1E-Type Coin Telephone Sets**



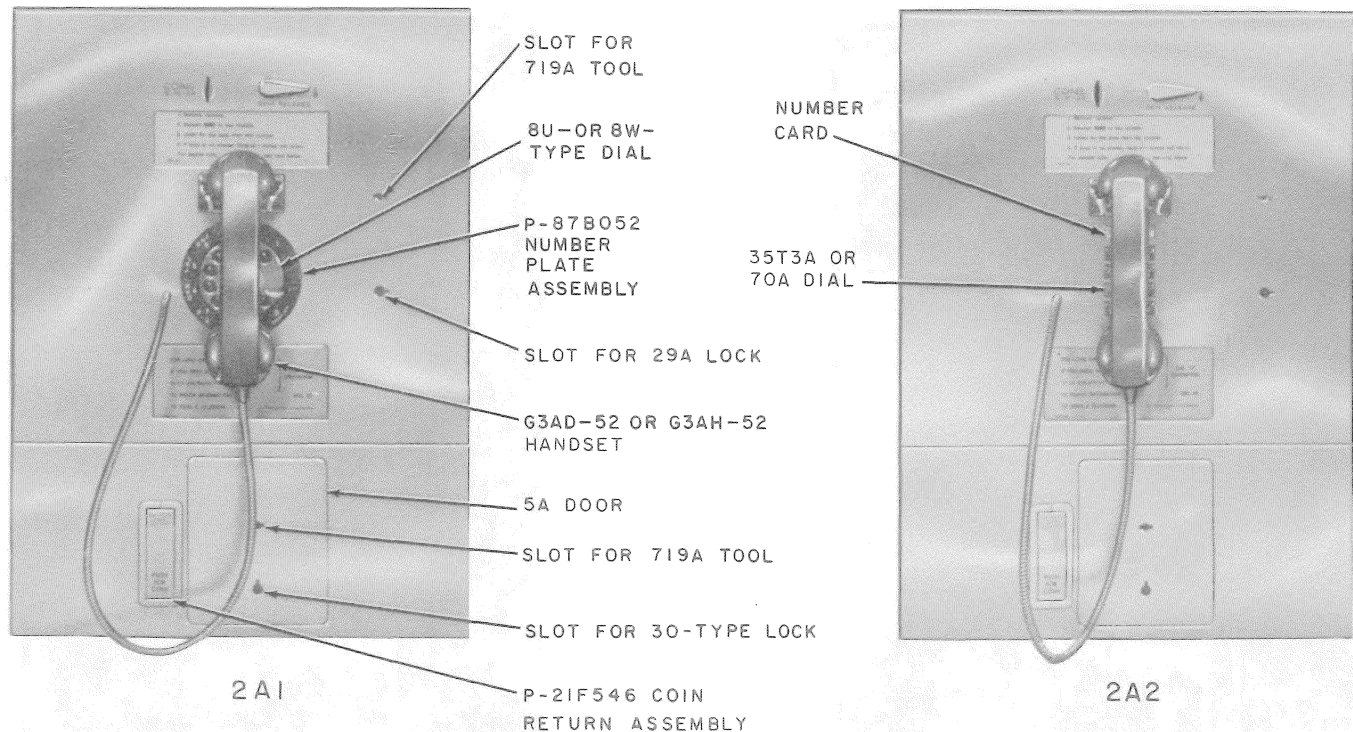


Fig. 4—2A-Type Coin Telephone Sets

that would be expensive to repair if the set is removed.

- Inductive effects—Locate set and associated wiring at least 6 inches from neon fixtures, transformers, or other interference-causing equipment.

#### BACKBOARDS AND SECURITY STUDS

- 2.04** Refer to Section 506-100-101 and observe the following:



*When mounting the coin telephone set, a vertical surface must be provided. A tilt greater than 1-1/2 degrees in any direction can cause chute malfunction. A vertical surface may be determined by the following steps:*

- Place a spirit level vertically against the mounting surface on which the set is to be installed.
- When a vertical reading is obtained, the end of the level opposite the point of contact

shall be no farther from the mounting surface than shown in Table A.

- The left to right mounting axis shall also be within 1-1/2 degrees of true vertical.

- 2.05** Refer to Fig. 6 and 7 and Tables B and C for security stud requirements.

#### MOUNTING ARRANGEMENTS

- 2.06** To gain access to the coin telephone set mounting holes:

- Remove cover unit assembly (1-type) per 2.10 or open door and faceplate assembly (2-type) per 2.11.
- Remove chute-totalizer per 2.12.
- Remove coin chassis per 2.22.

#### 1-Type

- 2.07** Refer to Table B for mounting applications.

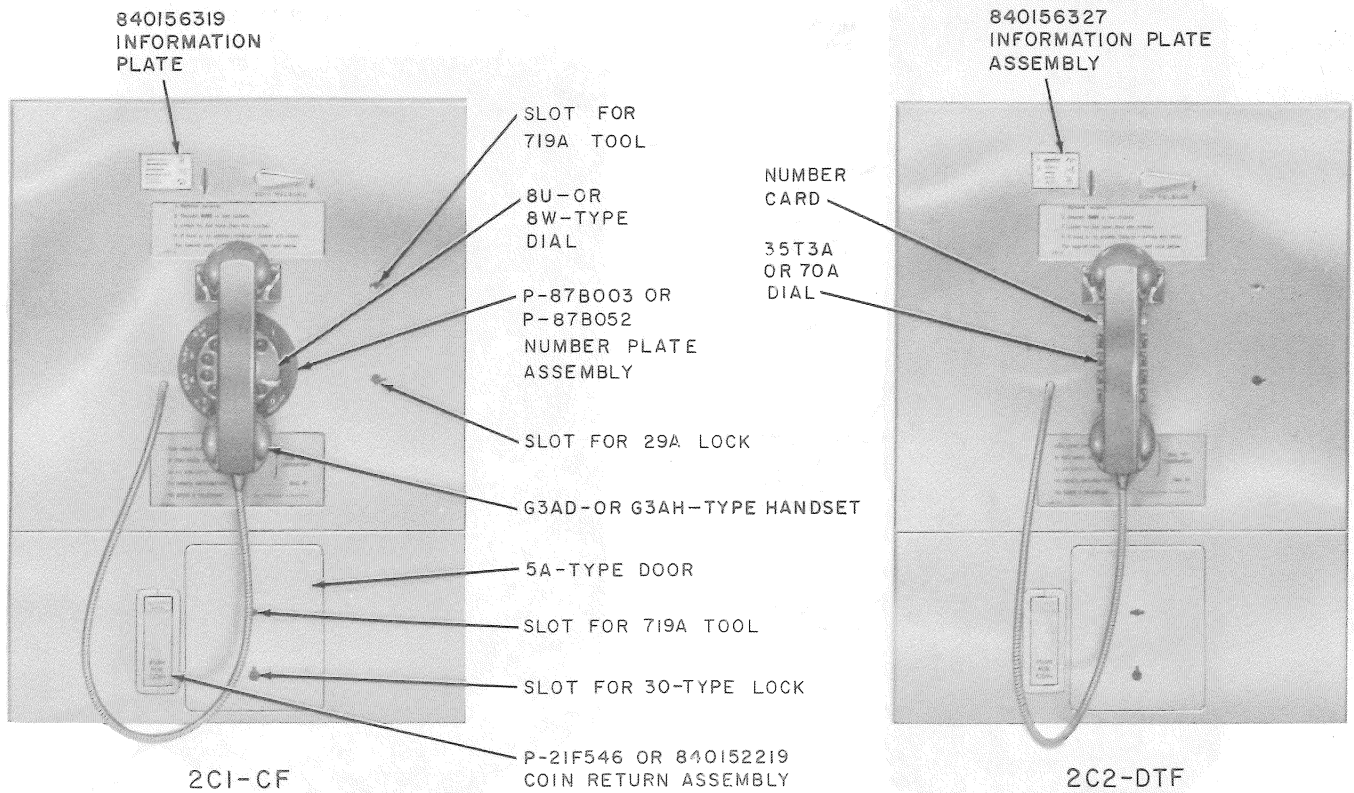


Fig. 5—2C-Type Coin Telephone Sets

**TABLE A**  
**METHOD OF DETERMINING**  
**A VERTICAL SURFACE**

SPIRIT LEVEL LENGTH	• MAXIMUM ALLOWABLE DISTANCE OUT OF PLUMB
18 inches	15/32 inch
24 inches	5/8 inch
30 inches	25/32 inch
36 inches	15/16 inch

**2-Type**

**2.08** To fully recess a 2-type set in a wall:

- (a) Ensure that wall thickness will accept the depth of set.

(b) Refer to Fig. 8 for dimensions of the set.

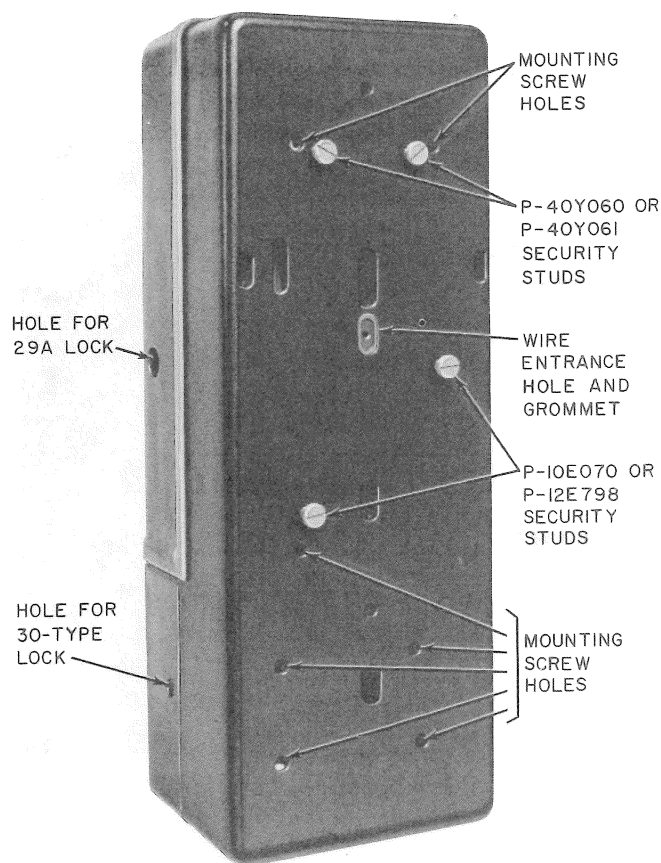
(c) Cut a hole in the wall.

- Height—22-25/64 inches
- Width—16-9/64 inches
- Depth—6 inches
- Bottom edge of cutout should be approximately 46 inches from floor.



*Ensure that the lip of the faceplate overlaps the wall around the hole.*

**2.09** Refer to Table C for all other applications.



**Fig. 6—Location of Mounting Screw Holes and Security Studs in 1-Type Set**

## COMPONENTS

### Cover Unit Assembly (1-Type Set)

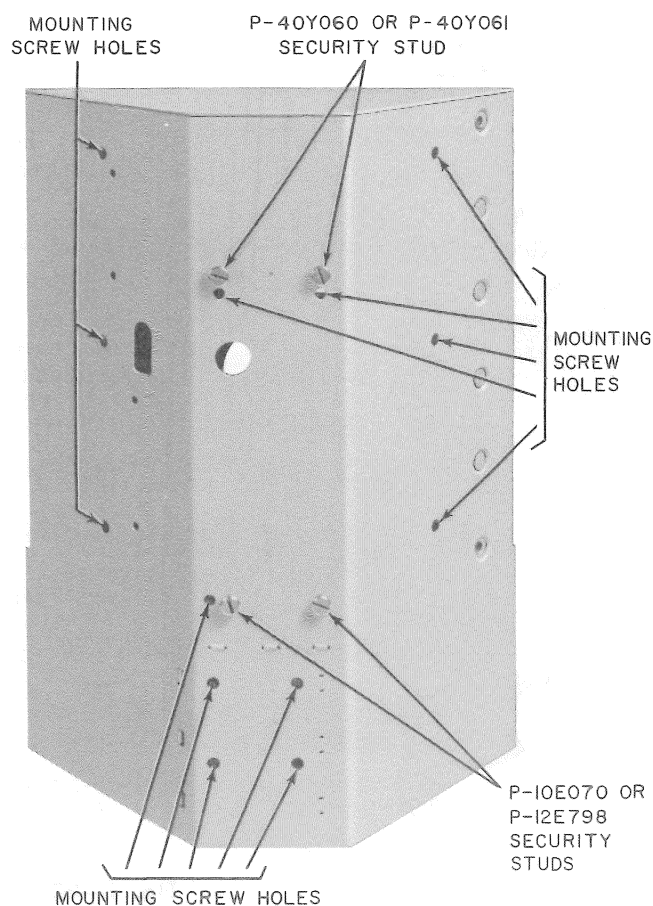
**2.10** To remove cover unit assembly:

- (1) Unlock 29A lock.
- (2) Release locking mechanism with 719A tool by turning tool 1/8-turn counterclockwise.
- (3) Pull cover forward about 3 inches to gain access to plug P1.
- (4) Disconnect plug P1 (Fig. 10, 11, or 12) by carefully pulling straight out as cover is lifted off.

### Door and Faceplate Assembly (2-Type Set)



*Exercise care to keep the set from tipping over when door is opened.*



**Fig. 7—Location of Mounting Screw Holes and Security Studs in 2-Type Set**

**2.11** To open door and faceplate assembly:

- (1) Unlock 29A lock.
- (2) Release locking mechanism with 719A tool by turning 1/8-turn counterclockwise.
- (3) Open door approximately 3 inches to gain access to plug P1 (Fig. 13 or 14).
- (4) Disconnect P1 by carefully pulling straight out as door is opened.

### Chute-Totalizer

**2.12** To remove chute-totalizer:

- (1) Disconnect plug P2 (Fig. 10 through 14).
- (2) Release chute locking lever.

TABLE B

## MOUNTING OF 1-TYPE SET

BACKBOARD, BOOTH, SHELF, MOUNTING, OR KIOSK	BACKBOARD REQUIRED	SECURITY STUDS	
		P-40Y060 (SHORT SHOULDER)	P-40Y061 (LONG SHOULDER)
178A-3 Backboard	Furnished	•	
10- and 11- Type Booths	D-179939 or D-179940 Kit of Parts	•	
KS-14611 Booth	Furnished	•	
KS-16797 Booth	B-190387		•
KS-19206 Booth	KS-19206 List 6 Installation Kit	•	
KS-19267 Shelf	Furnished	•	
KS-19340 Booth	KS-19340, List 53	•	
KS-19425 Booth	Furnished		•
KS-19426 Mounting	KS-19426, List 7 Installation Kit		•
KS-19580 Booth	Furnished	•	
KS-19945 Shelf	Existing or 178A-3 (Note 1)		•
KS-20194, L5 Shelf	178A-3 (Note 1)	•	
KS-2055 Kiosk	Furnished		•
KS-20842 Mounting	Furnished	None Required	

## Notes:

1. A 178A-3 backboard is furnished with each KS-19945 and KS-20194 shelf unless otherwise specified.
2. Seven 1/4-20 by 5/8-inch hardened RHM screws (P-23F790) are furnished with each coin telephone set for mounting to backboard.

(3) Lift spring out of groove in chute.

(4) Tilt top of chute forward and lift out.

### 2.13 To install chute-totalizer in set:

**Caution:** Before installing a chute in set, swing upper plate assembly open and clean off any foreign material adhering to chute magnets.

- (1) Place chute on locating pins at rear of hopper assembly, and back of housing (Fig. 15).

**Note:** Ensure that reject chute, return chute, and coin return assemblies line up properly.

- (2) Place spring in groove on chute.
- (3) Lock spring in place by pushing chute locking lever down.
- (4) Connect totalizer plug P2 to J2.

**Note 1:** On current model 1A totalizers, the mode of operation can be changed by operating the **CF-DTF** slide switch (Fig. 16). Older models of the 1A totalizer used a **PP-DTF** connector assembly.

**Note 2:** A black reference mark is on the outside ratchet wheel of current model totalizers to help determine whether the totalizer shaft is off-normal or in its **home** position. As viewed from the front of the coin telephone set, a totalizer is in its **home** position when the mark is at a point 1 tooth to the left of 6 o'clock position.

### 2.14 To determine totalizer initial rate setting:



**Use extreme care when checking initial rate or resetting totalizer. Avoid damaging pawl and spring pile-ups. Do not attempt to turn totalizer cam shaft in direction opposite to that shown in Fig. 17.**

- (1) Remove chute-totalizer per 2.12.

- (2) Loosen retaining screw and remove transparent dust cover.

TABLE C  
MOUNTING OF 2-TYPE SET

BOOTH, SHELF, OR MOUNTING	BACKBOARD REQUIRED	SECURITY STUDS		COVER REQUIRED (NOTE 1)
		P-40Y060 (SHORT SHOULDER)	P-40Y061 (LONG SHOULDER)	
KS-19206 Booth	KS-19206, List 7 Installation Kit	•		127B-Type Fig. 6
KS-19340 Booth	KS-19340, List 54 Backboard	•		127B-Type Fig. 6
KS-19426 Mounting	Furnished		•	KS-19426, List 34 Top Assembly
KS-19442 Booth	KS-19340, List 54 Backboard	•		127A-Type Fig. 6
KS-20194 Shelf	Furnished	•		
KS-20630 Booth	Furnished	None Required (Note 3)		

*Notes:*

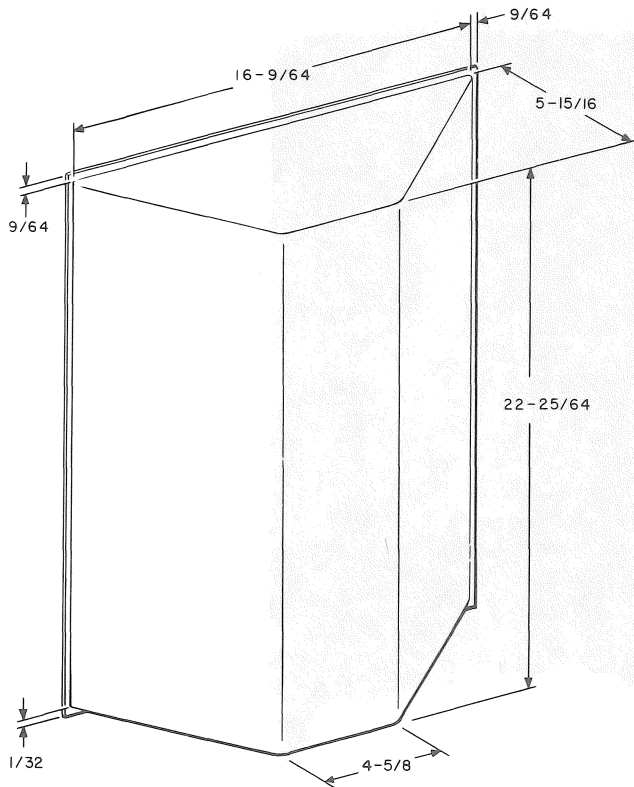
1. Three No. 8-32 by 3/16 RHM screws are furnished with cover for installation.
2. Thirteen 1/4-20 by 5/8-inch hardened RHM screws (P-23F790) are furnished with each coin telephone set for mounting to backboard.
3. Use thirteen 1/4-20 by 3/8 RHM screws in a KS-20630 booth in place of the 1/4-20 by 5/8 lg. furnished screws.

(3) Rotate shaft in the proper direction (Fig. 17) until detent roller on detent wheel is positioned between the two black marks. This occurs at the same time T2 rests in depression in shaft. This position is called **home** position.

(4) Release the reset latch by momentarily depressing it away from T1.

(5) Slowly rotate shaft in proper direction, and count the steps until T1 springs operate (indicated by forward movement of reset latch).

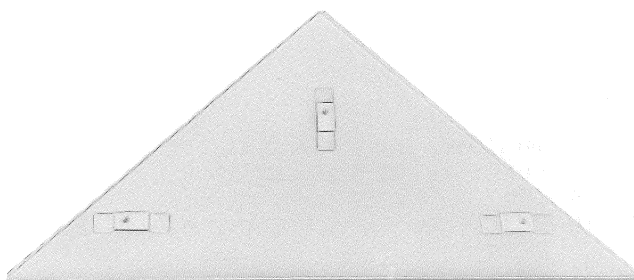
(6) Each step rotated from **home position** represents a 5-cent rate as shown in Table D.



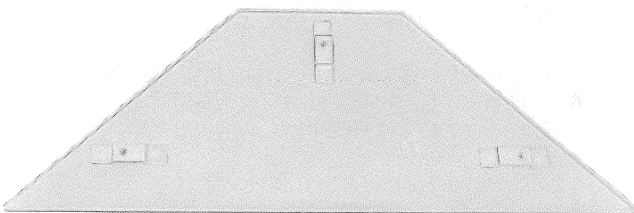
## NOTES:

1. ALL DIMENSIONS SHOWN ARE IN INCHES.
2. THE SWITCHHOOK AND HANDSET EXTEND 2-3/4 INCHES IN FRONT OF THE FACEPLATE.

Fig. 8—Rear View of 2-Type Set, Showing Dimensions



127A—BOTTOM SIDE



127B—BOTTOM SIDE

Fig. 9—127A- and 127B-Type Covers

## 2.15 To reset totalizer rate:

**Note:** Use two KS-16750, List 3 releasers or two paper clips to reset the rate.

*Increasing Rate (Fig. 18)*

- (1) Rotate shaft in proper direction (Fig. 17) until it is in home position as described in 2.14(3).
- (2) Further rotate shaft approximately 10 steps until a tab on the T1 cam is accessible as shown in Fig. 18 and 19.
- (3) Insert a KS-16750, List 3 releaser or a paper clip into one of the four holes indicated as hole 2 in center of shaft. Hold paper clip firmly so that shaft cannot move.

**Caution:** Do not push end of releaser or paper clip too far through shaft hole or it will damage insulation of coil located beneath shaft.

- (4) Position a second releaser or paper clip into the hole on T1 cam indicated as hole 1 and rotate cam in direction of the curved arrow as shown.



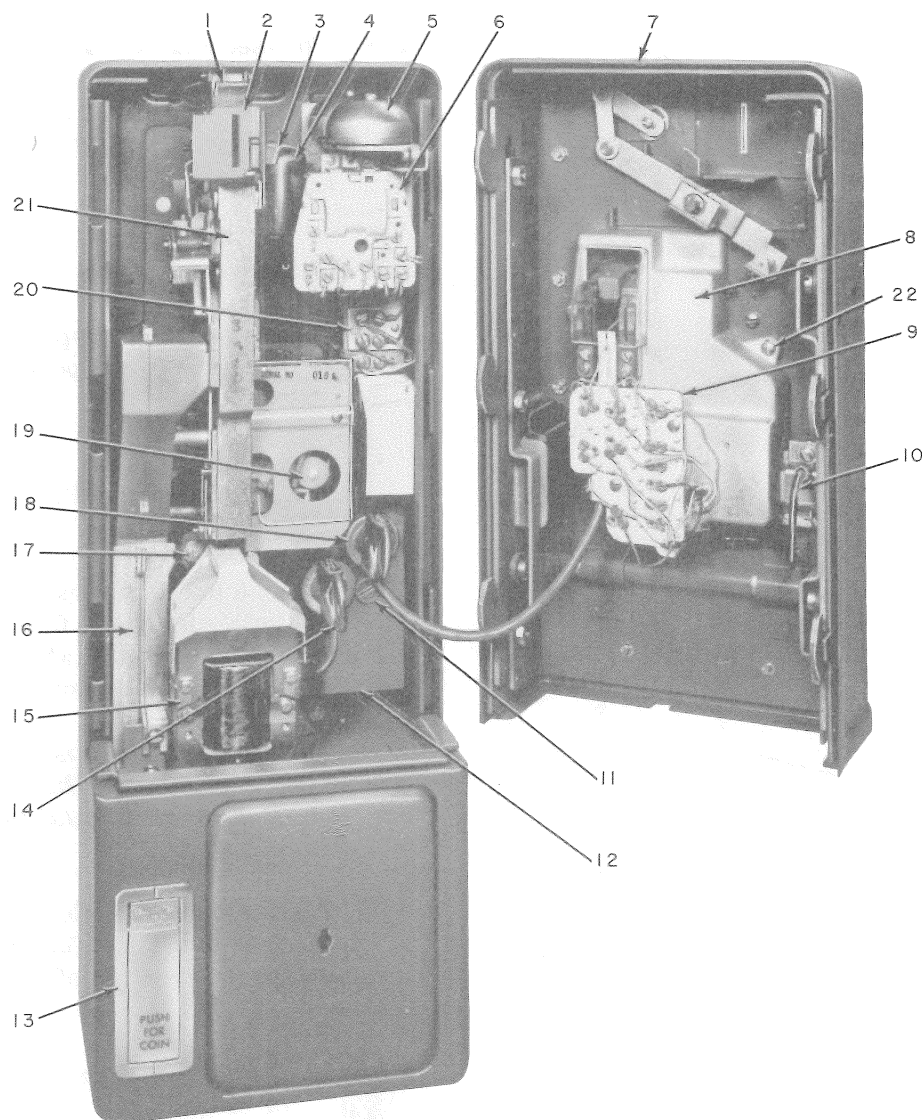
*If hole 1 in T1 cam has been mutilated or clogged beyond use, place releaser or paper clip against tab as shown in Fig. 18 and push tab in direction of the straight arrow.*

- (5) One step of rotation of the T1 cam in this direction increases the rate by 5 cents.
- (6) Check new initial rate setting per 2.14.

*Decreasing Rate (Fig. 19)*

- (7) Repeat steps (1) through (3).
- (8) Position a second releaser or paper clip into the hole on T1 cam indicated as hole 1 (Fig. 19) and rotate cam in direction of the curved arrow as shown.



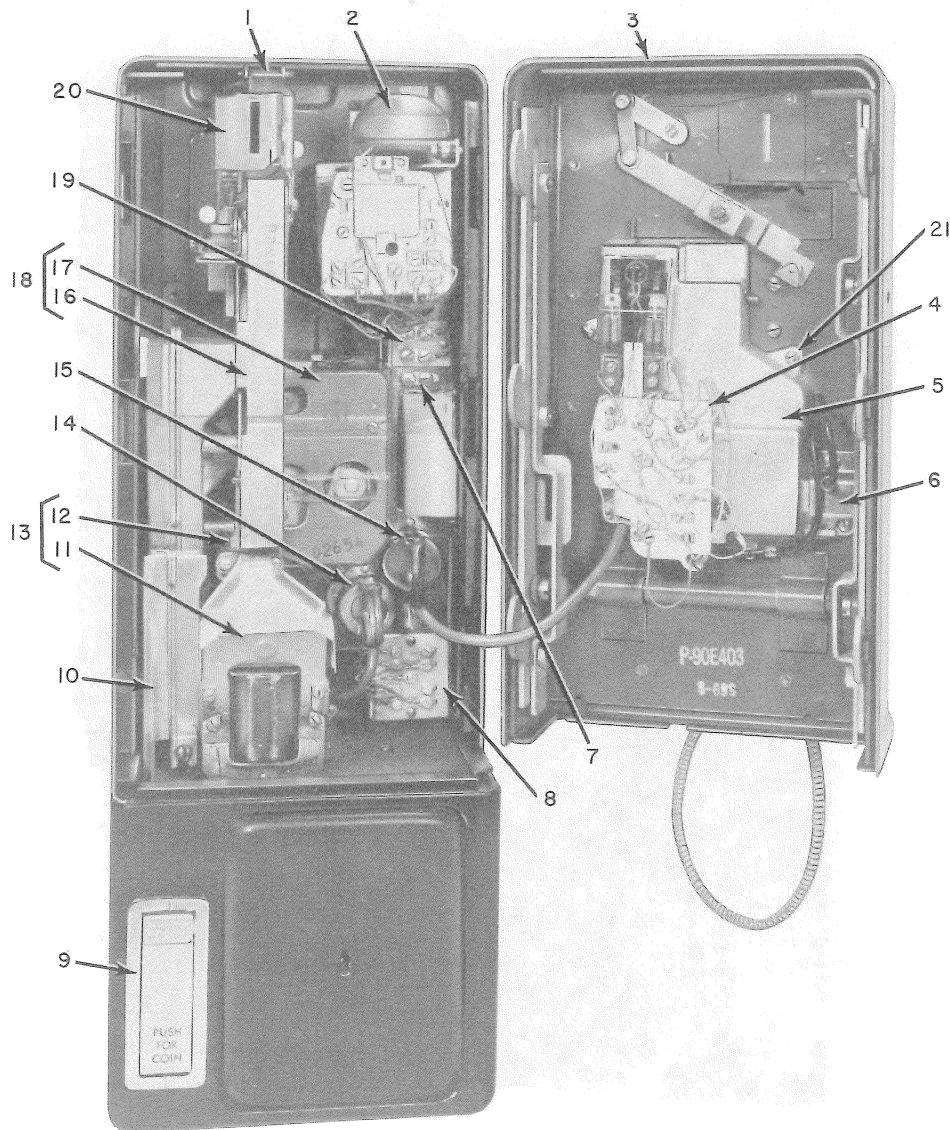


# LEGEND

- 1—P-27E542 CHUTE LOCKING LEVER AND P-27E497 SPRING
- 2—P-23F361 ENTRANCE STOP
- 3—P-21F297 BRACKET
- 4—303K MERCURY (A) RELAY
- 5—C4-TYPE RINGER
- 6—4010B, 4010C NETWORK OR 4228F, 4228H UNIVERSAL NETWORK
- 7—COVER UNIT ASSEMBLY  
P-90C800 1A1 W/8S DIAL  
P-90E400 1A1 W/8U OR 8W DIAL  
P-91C600 1A2 W/35G3A DIAL  
P-90D350 1A2 W/35T3A OR 70A DIAL
- 8—DIAL AND HOUSING ASSEMBLY  
P-83B752 1A1 W/8S DIAL  
P-90D274 OR 841317241 1A1 W/8U OR 8W DIAL  
P-26E153 1A2 W/35G3A DIAL  
P-90D275 1A2 W/35T3A DIAL

- 840155402 1A2 W/70A DIAL  
840346977 1A2 W/70A DIAL
- 9—TB2
- 10—P-15E444 COVERPLATE AND P-181678 BHM SCREW
- 11—CHASSIS MOUNTING SCREW
- 12—P-15E437 COIN CHASSIS ASSEMBLY OR 840693634 COIN CHASSIS
- 13—P-21F546 COIN RETURN ASSEMBLY
- 14—P2
- 15—P-15E687 OR 1A\* COIN RELAY ASSEMBLY
- 16—P-15E730 RETURN CHUTE ASSEMBLY
- 17—P-15E717 COIN HOPPER ASSEMBLY
- 18—P1
- 19—P-15E579 TOTALIZER ASSEMBLY
- 20—TB1
- 21—P-24E342 COIN CHUTE ASSEMBLY
- 22—840157390 SELF LOCKING SCREW

Fig. 10—Assembly of Parts (1A-Type)



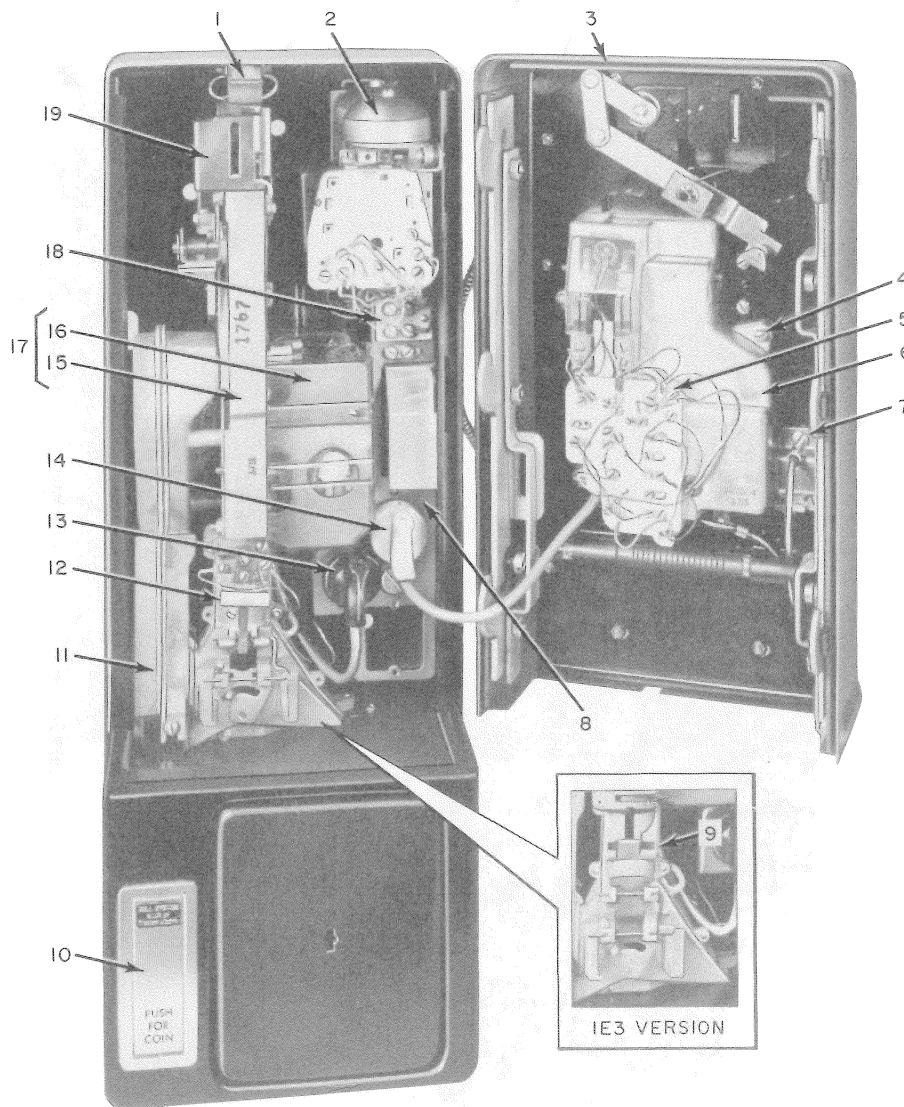
## LEGEND

1—P-27E542 CHUTE LOCKING LEVER AND P-27E497 SPRING  
 2—C4-TYPE RINGER  
 3—P-90E400 (1C1) OR P-90E500 (1C2) COVER UNIT ASSEMBLY  
 4—TB2  
 5—DIAL AND HOUSING ASSEMBLY  
   P-90D274 OR 841317241 1C1  
   P-90D275 1C2 W/35T3A DIAL  
   840155402 1C2 W/70A DIAL  
   840346977 1C2 W/70A DIAL  
 6—P-15E444 COVERPLATE AND P-181678 BHM SCREW  
 7—1A (SF) OR 31A (DF) COIN CHASSIS

8—TB3  
 9—P-21F546 COIN RETURN ASSEMBLY  
 10—P-15E730 RETURN CHUTE ASSEMBLY  
 11—1A COIN RELAY  
 12—P-15E717 COIN HOPPER ASSEMBLY  
 13—1AA COIN RELAY  
 14—P2  
 15—P1  
 16—20A CHUTE  
 17—1A TOTALIZER  
 18—20A1A CHUTE-TOTALIZER  
 19—TB1  
 20—P-23F361 ENTRANCE STOP  
 21—840157390 SELF-LOCKING SCREW

Fig. 11—Assembly of Parts (1C-Type)

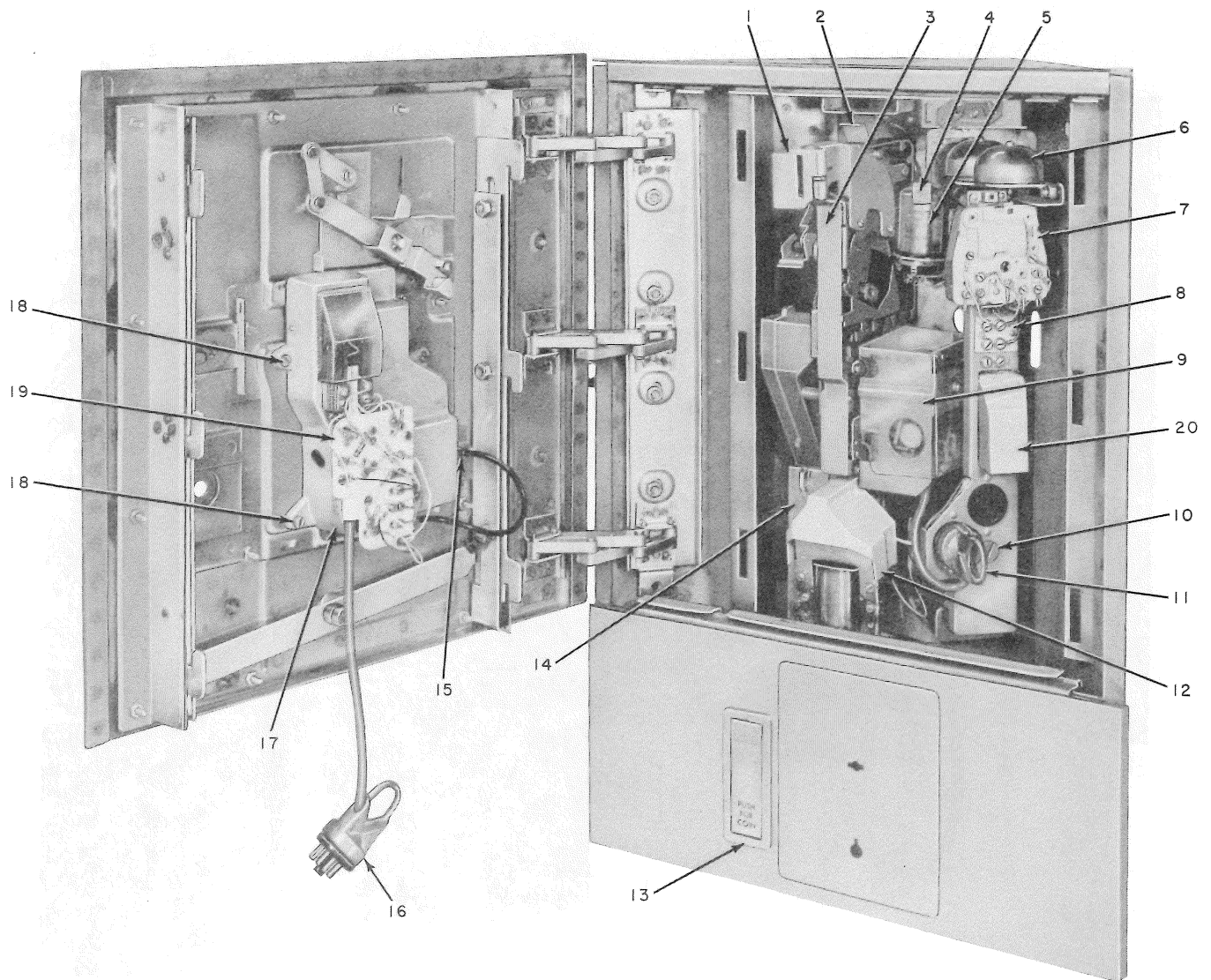




# LEGEND

- |   |                                     |
|---|-------------------------------------|
| 1—P-27E542 CHUTE LOCKING LEVER AND P-27E497 SPRING  | 8—30A (SF) OR 30B (DF) COIN CHASSIS |
| 2—C4A RINGER  | 9—50B HOPPER (1E3 ONLY)             |
| 3—COVER UNIT ASSEMBLY   | 10—P-21F546 COIN RETURN ASSEMBLY    |
| ●840658033 (1E1-3)   ●840659031 (1E3-3)   | 11—P-15E730 RETURN CHUTE ASSEMBLY   |
| ●840658447 (1E1-44) ●840659445 (1E3-44)   | 12—50A HOPPER (1E1 ONLY)            |
| ●840658512 (1E1-51) ●840659510 (1E3-51)   | 13—P2                               |
| 4—840157390 DIAL AND HOUSING MOUNTING SCREW   | 14—P1                               |
| 5—TB2   | 15—20A CHUTE                        |
| 6—P-90D274 OR 841317241 DIAL AND HOUSING ASSEMBLY (1E1) OR P-23F651 OR 841317266 HOUSING ASSEMBLY (1E3) | 16—10A TOTALIZER                    |
| 7—P-15E444 COVERPLATE AND P-181678 BHM SCREW  | 17—20A10A CHUTE-TOTALIZER           |
|   | 18—TB1                              |
|   | 19—P-23F361 ENTRANCE STOP           |

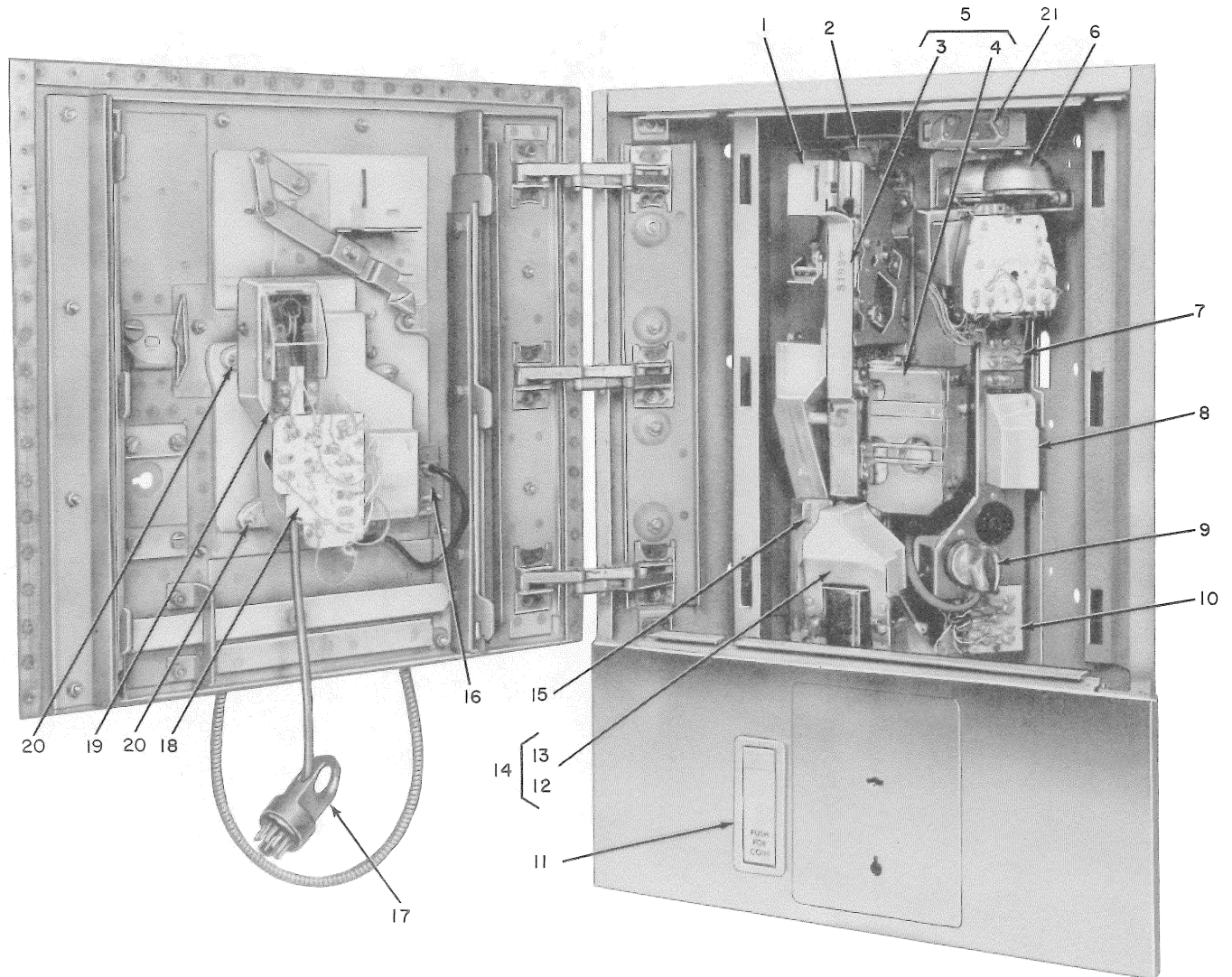
Fig. 12—Assembly of Parts (1E-Type)



## LEGEND

- |  |   |
|--|---|
| 1—P-23F361 ENTRANCE STOP                                 | 14—P-15E730 RETURN CHUTE ASSEMBLY                           |
| 2—P-27E542 CHUTE LOCKING LEVER AND P-27E497 SPRING       | 15—P-15E444 COVERPLATE AND P-181678 BHM SCREW               |
| 3—P-24E342 COIN CHUTE ASSEMBLY                           | 16—P1   |
| 4—P-21F297 BRACKET                                       | 17—DIAL AND HOUSING ASSEMBLY                                |
| 5—303K MERCURY (A) RELAY                                 | P-83B752 2A1 W/8S DIAL                                      |
| 6—C4-TYPE RINGER   | P-90D274 OR 84137241 2A1 W/8U OR 8W DIAL                    |
| 7—4010B, 4010C NETWORK OR 4228F, 4228H UNIVERSAL NETWORK | P-26E153 2A2 W/35G3A DIAL                                   |
| 8—TB1  | P-90D275 2A2 W/35T3A DIAL                                   |
| 9—P-15E579 TOTALIZER ASSEMBLY                            | 840155402 2A2 W/70A DIAL                                    |
| 10—CHASSIS MOUNTING SCREW                                | 840346977 2A2 W/70A DIAL                                    |
| 11—P2  | 18—DIAL HOUSING MOUNTING SCREW                              |
| 12—P-15E687 OR 1A* COIN RELAY ASSEMBLY                   | 19—TB2  |
| 13—P-21F546 COIN RETURN ASSEMBLY                         | 20—P-15E437 COIN CHASSIS ASSEMBLY OR 840693634 COIN CHASSIS |

Fig. 13—Assembly of Parts (2A-Type)



LEGEND

- |  |   |
|--|---|
| 1—P-23F361 ENTRANCE STOP   | 15—P-15E730 RETURN CHUTE ASSEMBLY             |
| 2—P-27E542 CHUTE LOCKING LEVER AND P-27E497 SPRING                 | 16—P-15E444 COVERPLATE AND P-181678 BHM SCREW |
| 3—20A CHUTE  | 17—P1   |
| 4—1A TOTALIZER   | 18—TB2  |
| 5—20A1A CHUTE-TOTALIZER  | 19—DIAL AND HOUSING ASSEMBLY                  |
| 6—C4-TYPE RINGER   | P-90D274 OR 841317241 2C1-67 SET              |
| 7—TB1  | 840152227 OR 841317258 2C1-84 SET             |
| 8—1A (SF) OR 31A (DF) COIN CHASSIS                                 | P-90D275 2C2-67 SET W/35T3A DIAL              |
| 9—P2   | 840155402 2C2-67 SET W/70A DIAL               |
| 10—TB3   | 840346977 2C2-67 SET W/70A DIAL               |
| 11—P-21F546 (STAINLESS) OR 840152219 (BRONZE) COIN RETURN ASSEMBLY | 840157580 2C2-84 SET W/35T3A DIAL             |
| 12—1A COIN RELAY   | 840155394 2C2-84 SET W/70A DIAL               |
| 13—P-15E717 COIN HOPPER ASSEMBLY                                   | 840347173 2C2-84 SET W/70A DIAL               |
| 14—1AA COIN RELAY  | 20—840157390 SELF-LOCKING SCREW               |
|  | 21—7A CLIP                                    |

Fig. 14—Assembly of Parts (2C-Parts)

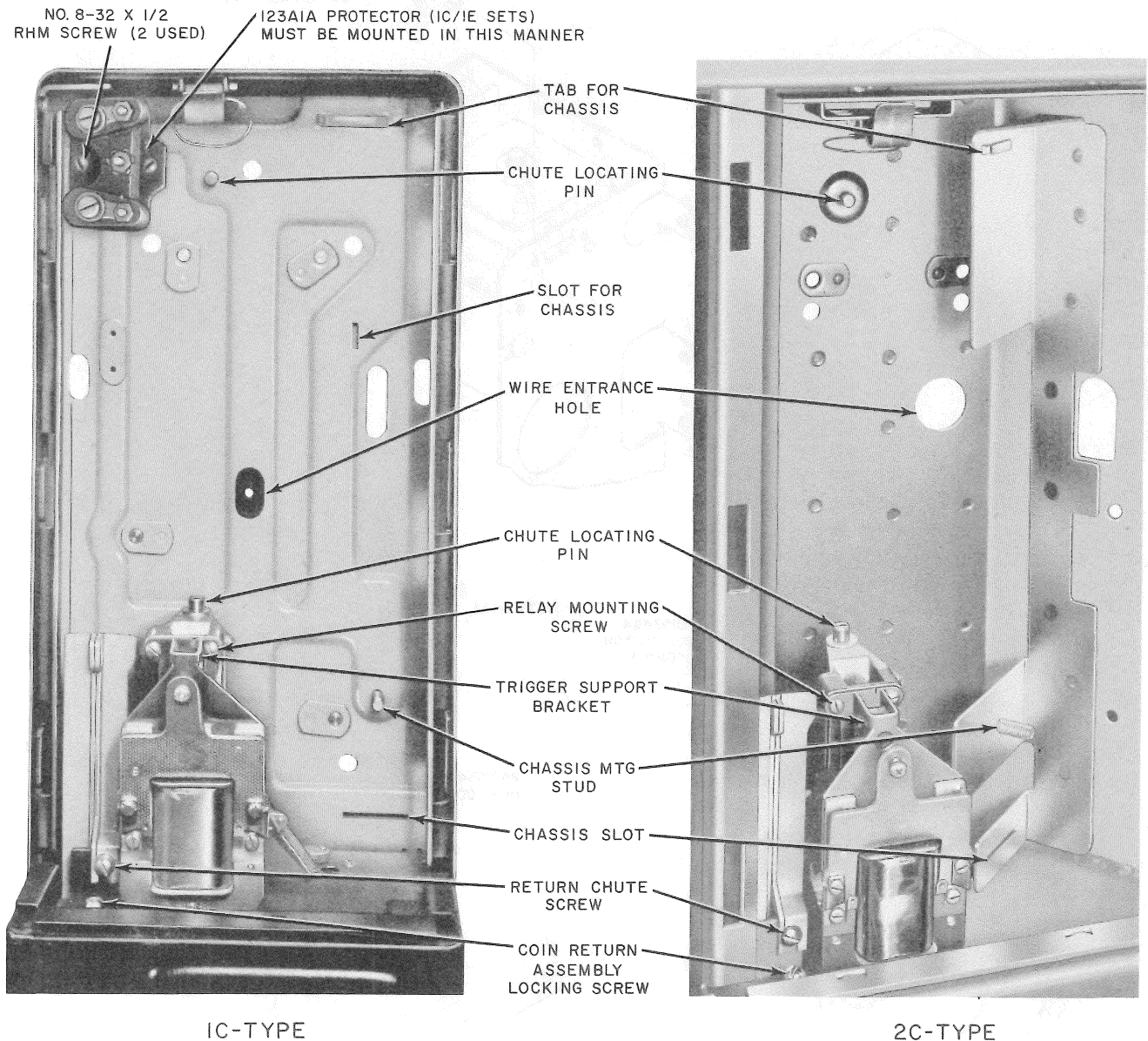


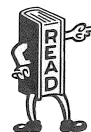
Fig. 15—Housing and Mounting Plate Assembly



*If hole 1 in T1 cam has been mutilated or clogged beyond use, place releaser or paper clip against tab as shown in Fig. 19 and push tab in direction of the straight arrow.*

- (9) One step of rotation of the T1 cam in this direction decreases the rate by 5 cents.
- (10) Check new initial rate setting as described in 2.14.

## 2.16 To remove totalizer from chute:



*Do not damage totalizer arms when removing or replacing totalizer on chute or when returning damaged totalizers to service center. Do not turn screws that are sealed with glyptal. When returning totalizers or chutes to service center, reuse packing material from which the new item was removed.*

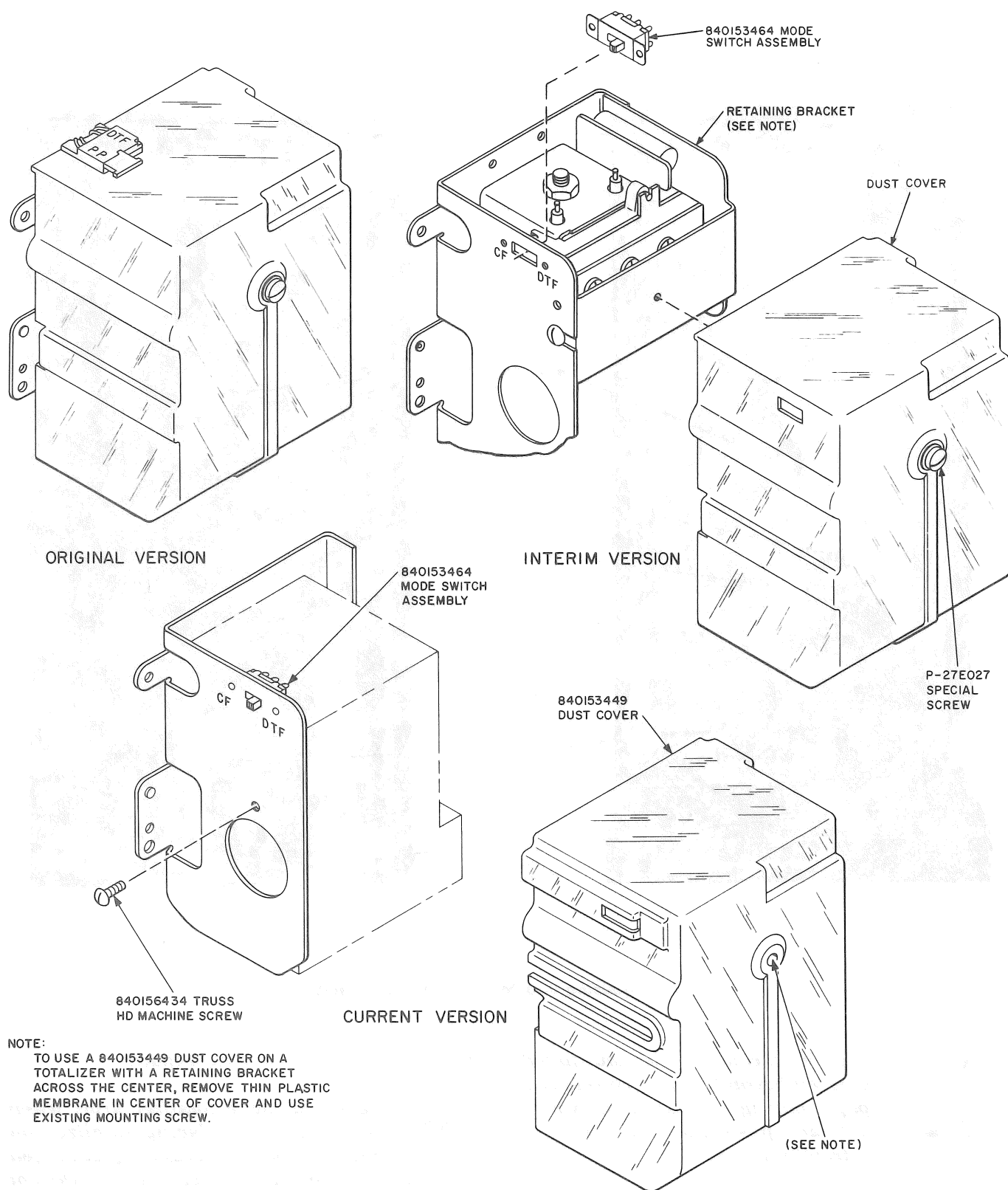


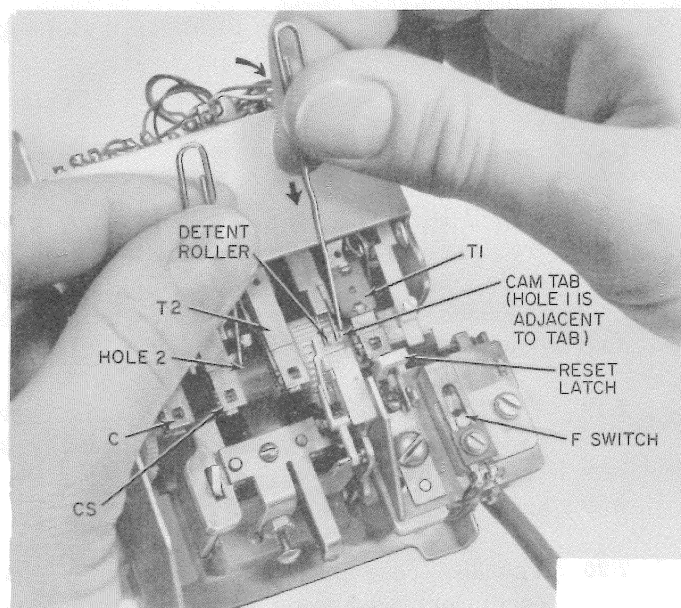
Fig. 16—1A Totalizer



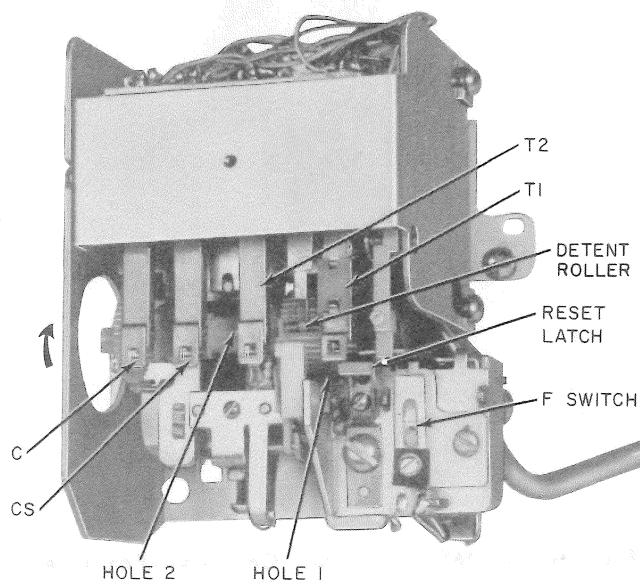
**TABLE D**  
**METHOD FOR DETERMINING**  
**INITIAL RATE \***

NO. OF STEPS SHAFT IS ROTATED FROM HOME POSITION UNTIL T1 OPERATES	INDICATES FOLLOWING INITIAL RATE SETTING
1	5 cents
2	10 cents
3	15 cents
4	20 cents
5	25 cents
6	30 cents

\*30 cents is not the maximum setting that can be obtained.



**Fig. 18—Increasing Totalizer Rate (Typical)**

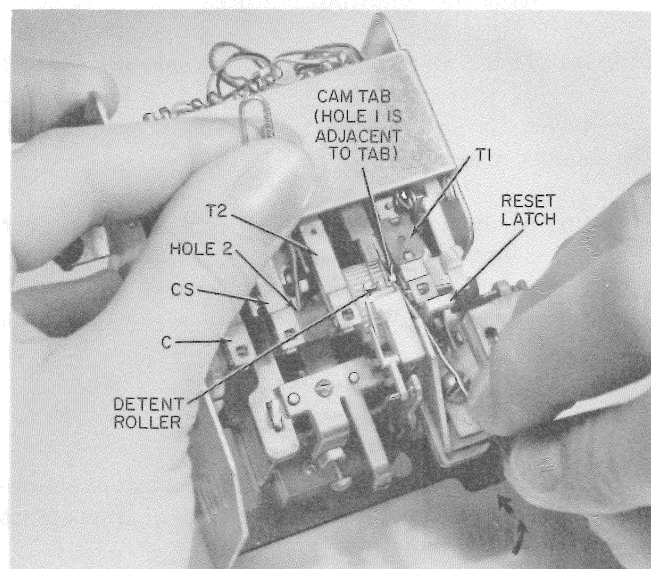


**Fig. 17—Checking Totalizer Rate (Typical)**

- (1) Unscrew three captive-type mounting screws from chute.
- (2) Carefully remove totalizer from chute.

**2.17 To install totalizer on chute:**

- (1) Replace totalizer cover, if removed previously.



**Fig. 19—Decreasing Totalizer Rate (Typical)**

- (2) Line up the long guide pins on the totalizer with holes in the chute.
- (3) Place totalizer on chute making sure that totalizer arms enter slots in chute. Be sure short guide pins on chute are in mating totalizer bracket holes.

- (4) Tighten three captive totalizer mounting screws.

### Coin Chassis

**2.18** The P-15E437 coin chassis (with single frequency [SF] coin tone oscillator) used in 1A/2A-type coin telephone sets is being replaced by an 840693634 coin chassis (Fig. 20) which has a dual frequency (DF) oscillator.

**2.19** The 1A coin chassis (with SF coin tone oscillator) used in 1C/2C-type coin telephone sets is replaced by a 31A coin chassis (Fig. 21) which has a DF oscillator.

**2.20** The 30A coin chassis (with SF coin tone oscillator) used in 1E-type coin telephone sets is being replaced by a 30B coin chassis (Fig. 22) which has a DF oscillator.

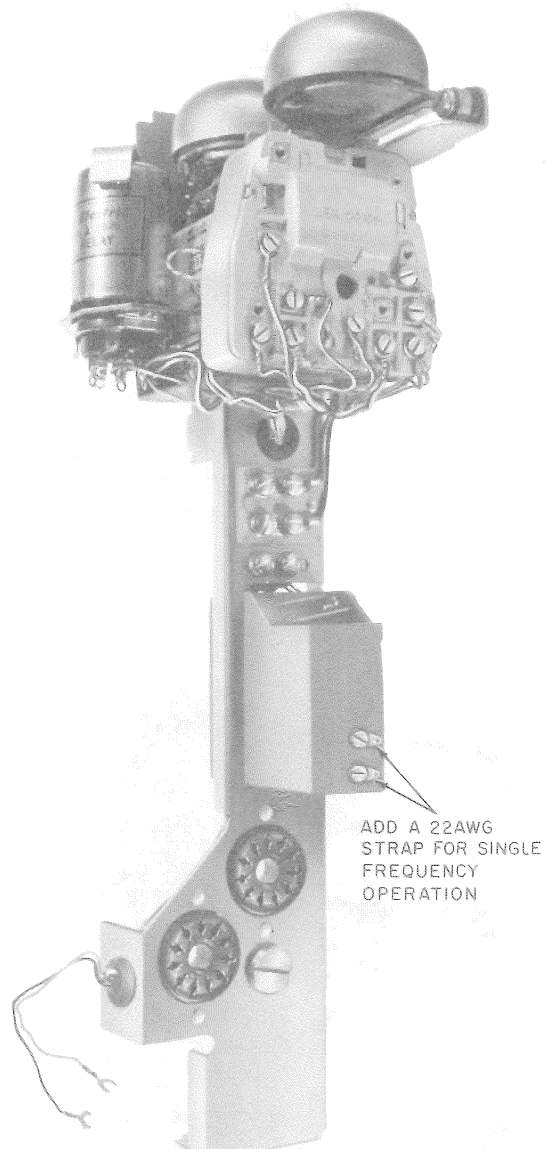
**2.21** These DF oscillator equipped coin chassis have the following features:

- (a) There are two screw terminals on the side of the oscillator. When the two screw terminals are shorted the oscillator is in the SF mode; when open, DF mode.
- (b) All coin chassis and all coin telephone sets containing them will be shipped from the factory in the DF mode. If SF mode is required, add a No. 22 AWG strap between the two screw terminals.

**2.22** To remove coin chassis:

- (1) Disconnect Tip, Ring, and Gnd connections. Disconnect 14 AWG Gnd strap if protector is mounted in set.
- (2) Remove chute-totalizer per 2.12.
- (3) On 1A/2A/1C/2C-type sets, disconnect (BK) and (Y) leads from coin relay and carefully pull leads through eyelet on side of hopper.
- (4) On 1E1 set, disconnect (S-R) and (G) leads from coin hopper and carefully pull leads through eyelet on side of hopper.

- (5) Loosen chassis mounting captive screw.



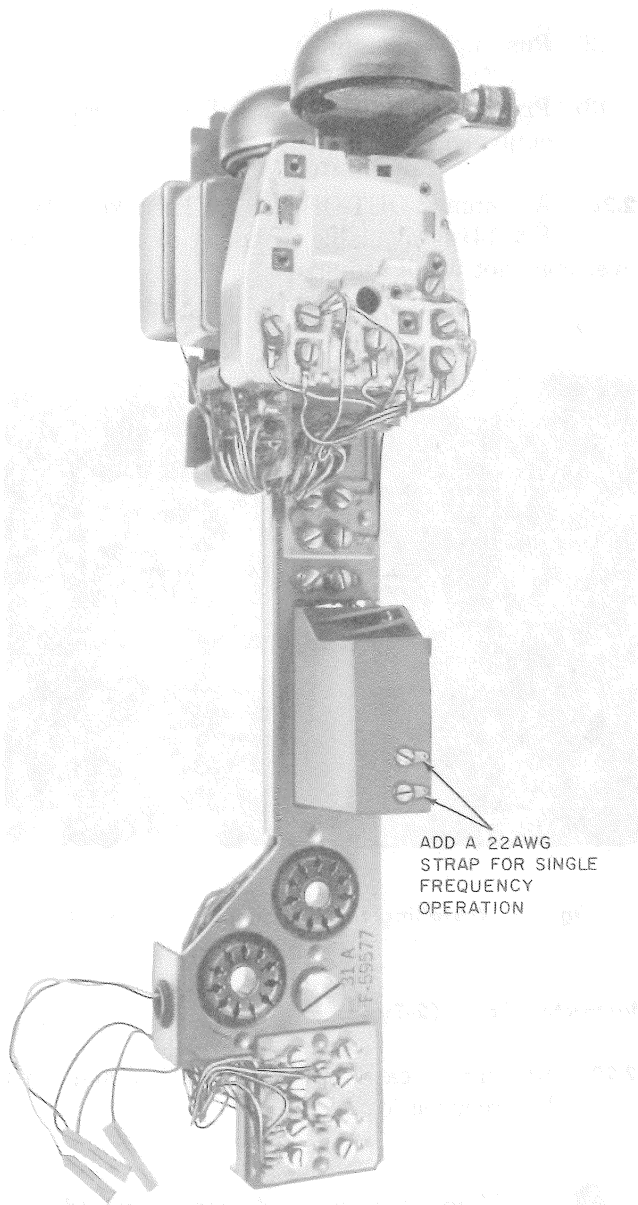
**Fig. 20—840693634 Coin Chassis—For Use in 1A/2A-Type Sets**

- (6) Pull chassis assembly out at bottom and slide down to remove.

**2.23** To install coin chassis:

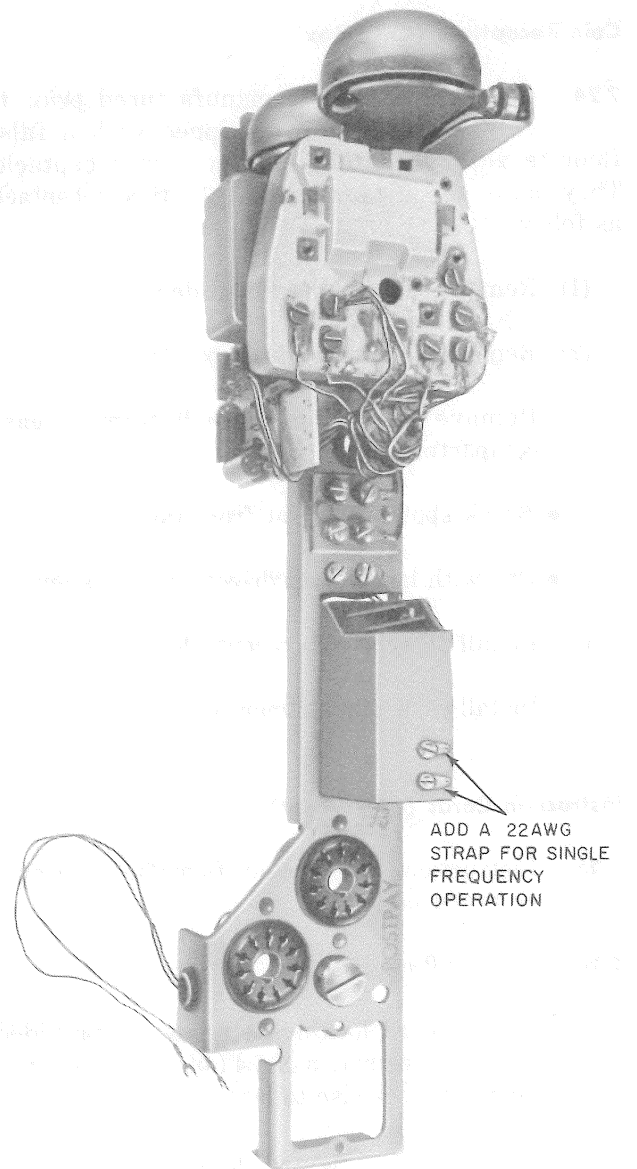
**Note:** When installing coin chassis assembly, dress inside wire behind chassis and to the right of TB1. Allow for wires to be connected to TB1 from right side.

- (1) Slide chassis under tab (Fig. 15).



**Fig. 21—31A Coin Chassis—For Use in 1C/2C-Type Sets**

- (2) Seat chassis tabs in slots.
- (3) Tighten chassis mounting captive screw.
- (4) On 1A/2A/1C/2C-type sets, thread (BK) and (Y) leads through eyelet on side of hopper.
  - Connect (BK) lead to terminal 3 on coin relay
  - Connect (Y) lead to terminal G on coin relay.



**Fig. 22—30B Coin Chassis—For Use in 1E-Type Sets**

- (5) On the 1E1 set, thread (S-R) and (G) leads through eyelet on side of hopper.
  - Connect (S-R) lead to left side of resistor
  - Connect (G) lead to right side of resistor.
- (6) On 1E3 set, tie the (S-R) and (G) leads together using a D-161488 connector.
- (7) Connect Tip, Ring, and Gnd leads, and 14 AWG strap if protector is mounted in set.



### Coin Receptacle (Cash Box)

**2.24** Coin telephone sets manufactured prior to July 15, 1972 were equipped with a false floor to accommodate a 1B-type coin receptacle. They can be modified to accept a 1C-type receptacle as follows:

- (1) Remove cash compartment door.
- (2) Remove 1B-type coin receptacle.
- (3) Remove false floor from bottom of cash compartment.
  - Break spot welding at front tab
  - Pry with large screwdriver or equivalent
- (4) Install 1C-type coin receptacle.
- (5) Install cash compartment door.

### Instruction Cards (1-Type Set)

**2.25** Instruction cards are not furnished and must be procured locally.

**2.26** To install card:

- (1) Loosen card locking setscrew (if provided) in faceplate using a No. 4 (.050) Allen wrench. Turn counterclockwise to loosen.
- (2) Push up with fingers (Fig. 23).
- (3) Snap card in place.
- (4) Ensure that card is seated properly in slot.
- (5) Tighten the No. 4-40 by 3/16-inch hex socket setscrew (840153381), if applicable, in faceplate (Fig. 24). Turn clockwise to tighten.



*Do not further tighten setscrew after it becomes snug as this may bow the faceplate.*

**2.27** To remove card:

- (1) Loosen setscrew in faceplate, if provided, by turning it counterclockwise.

- (2) Push up with fingers.

- (3) Pry bottom out with small screwdriver or equivalent.

**2.28** A gummed OUT-OF-SERVICE sticker (Form E-4914) is available in books of five. Place over coin slot when required.



**Fig. 23—Installing Instruction Cards (Typical)**

### Instruction Cards (2-Type Set)

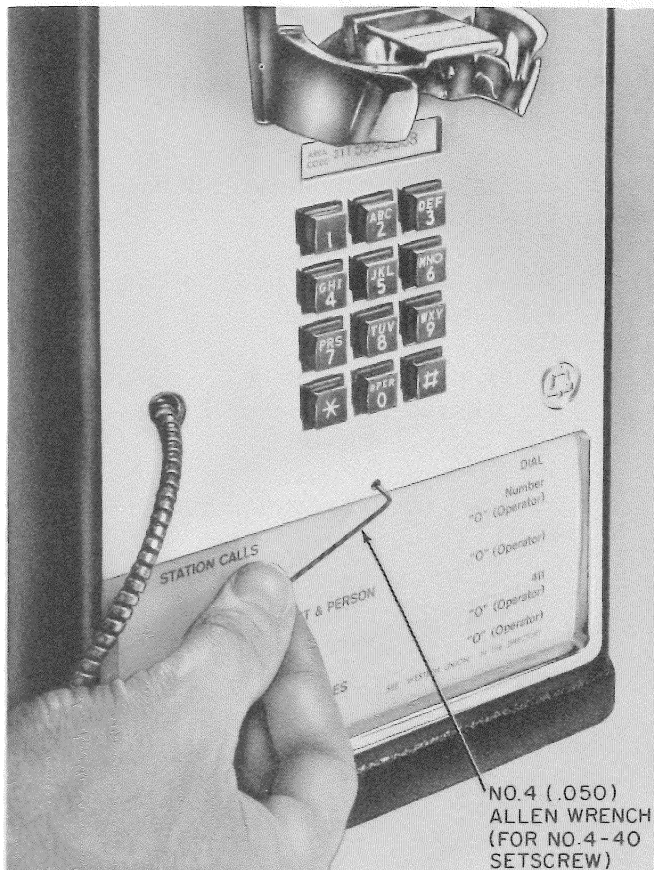
**2.29** Instruction cards are not furnished and must be procured locally.



*There are two different methods for securing instruction cards in the 2-type sets.*

*(1) A P-23F041 card spring is provided in the bottom of each card slot on early 2-type sets. This spring puts pressure on bottom of card to hold it in place.*

*(2) A cam located in the top of each card slot on current 2-type sets holds the card secure. The cam is operated with a No. 4 (.050) Allen wrench.*



**Fig. 24—Securing Instruction Cards (Typical)**

**2.30** To install card in a set equipped with a spring:

- (1) Push down with fingers (Fig. 25).
- (2) Snap card in place.
- (3) Ensure that card is seated properly.

**2.31** To remove card from a set equipped with a spring:

- (1) Push down with fingers.
- (2) Pry out from top with small screwdriver or equivalent.

**2.32** To install card in a set equipped with a cam:

- (1) Using a No. 4 (.050) Allen wrench, turn the cam until the low side is adjacent to card opening.

(2) Push up with fingers (Fig. 26).

(3) Snap card in place.

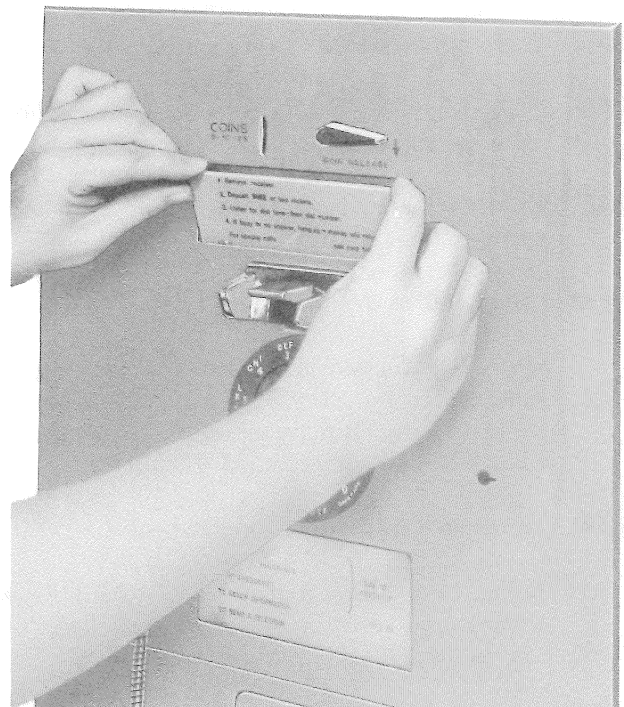
(4) Ensure that card is seated properly in slot.

(5) Secure card by turning cam 180 degrees, either clockwise or counterclockwise.

**2.33** To remove a card from a set equipped with cam:

- (1) Turn cam 1/2 turn away from card using a No. 4 (.050) Allen wrench.
- (2) Push up with fingers.
- (3) Pry out from bottom with a small screwdriver or equivalent.

**2.34** Refer to 2.28.



**Fig. 25—Installing Instruction Card in 2-Type Set With P-23F041 Card Spring**

**Number Card (8S Dial [MD])**

**Note:** The fingerwheel for an 8S dial is packaged separately.



**Fig. 26—Installing Instruction Card in 2-Type Set With Cam**

**2.35** Place number card in fingerwheel.

**2.36** Place fingerwheel on dial with operator hole over the 9 position.

**2.37** Rotate fingerwheel counterclockwise until spring clamp snaps in place.

#### Number Card (8U or 8W Dial)

**Note:** The fingerwheel (840151872) is shipped assembled to the 8U or 8W dial and must be removed to install number card. It is secured with a No. 4-40 setscrew (840158331).

**2.38** To remove 840151872 fingerwheel:

- (1) Refer to Fig. 27, use a No. 4 (.050) Allen wrench and turn the setscrew in a clockwise direction until it clears fingerwheel.

**Caution:** Do not turn setscrew beyond stopping point as this may damage screw or wrench.

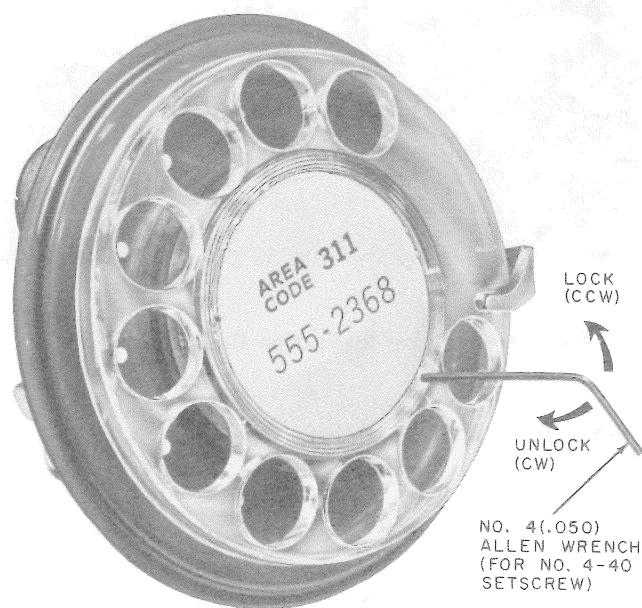
- (2) Turn fingerwheel in a clockwise direction until operator hole is in the 9 position and lift off.

**2.39** Install number card.

**2.40** To install fingerwheel:

- (1) Ensure that setscrew is all the way in (clockwise).
- (2) Place fingerwheel on dial with operator hole over the 9 position.
- (3) Rotate fingerwheel counterclockwise until it is in its normal position.
- (4) Using a No. 4 (.050) Allen wrench, turn the setscrew in a counterclockwise direction until the stop is reached (Fig. 27).

**Caution:** Observe caution following 2.38(1).



**Fig. 27—Installing Fingerwheel on 8U or 8W Dial**

#### Number Card (TOUCH-TONE Set)

**2.41** The number card shall be furnished locally.

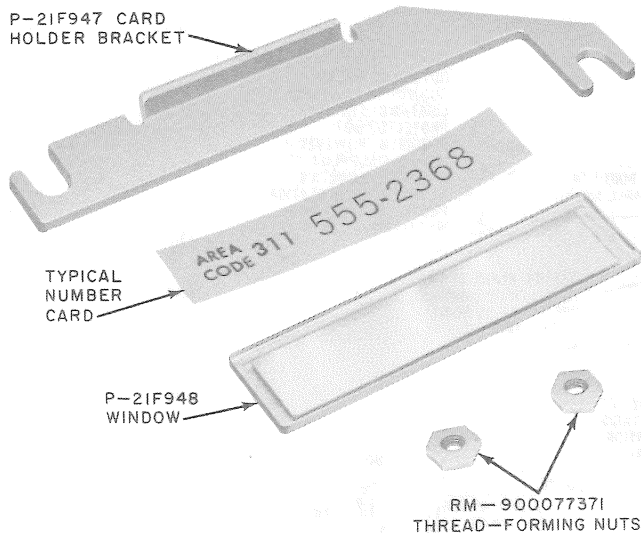
**2.42** A P-21F947 card holder bracket, P-21F948 window, and two hex nuts (Fig. 28) are packaged separately and shipped from the factory in the cash compartment.

**2.43** Install number card as follows:

- (1) Remove dial housing.

- (2) Insert P-21F948 window in faceplate from rear (Fig. 29).
- (3) Insert number card in window (Fig. 29).
- (4) Secure window and number card using the P-21F947 card holder bracket and two RM-900077371 thread forming nuts (Fig. 30).
- (5) Install dial housing.

**Note:** Ensure that the four dial housing mounting screws are tight to prevent dial housing from becoming loose due to excessive vibration.

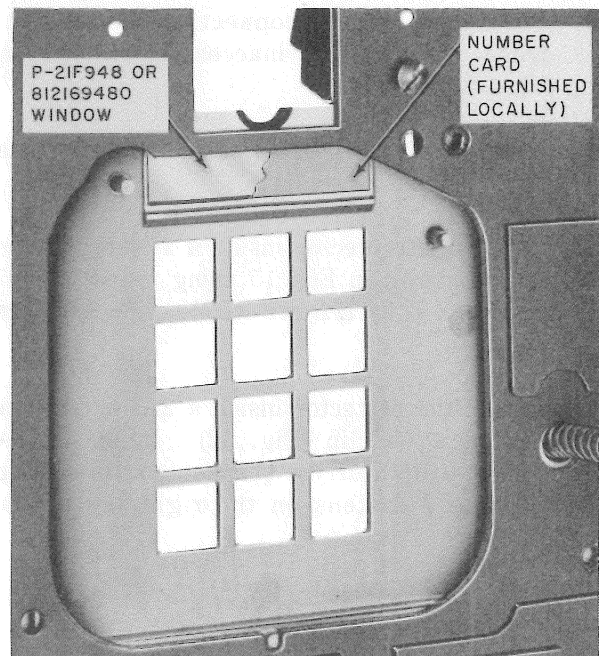


**Fig. 28—Number Card and Associated Hardware (TOUCH-TONE Set)**

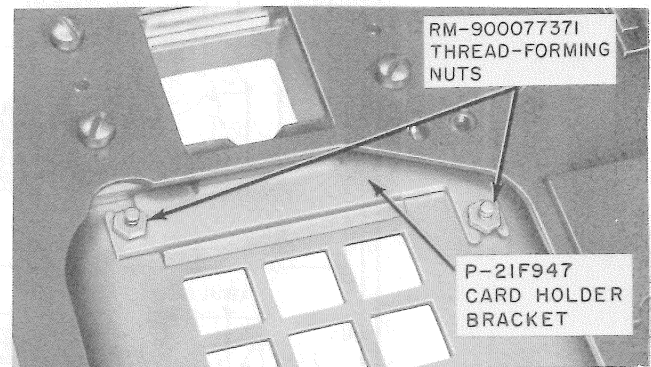
## WIRING

**2.44** Select and place wire in accordance with sections covering inside wiring. Wire all coin telephone sets with triple conductor station wire to provide individual ground for each station. The ground connection for this conductor must be the same one used for signaling ground.

**Note:** Refer to Fig. 31 for additional information on grounding.



**Fig. 29—Window and Number Card Installed in Faceplate (TOUCH-TONE Set)**



**Fig. 30—Card Holder Bracket Installed (TOUCH-TONE Set)**

**2.45** Feed inside wire through wire entrance hole (Fig. 15) as set is mounted on backboard.

**2.46** Dress wire behind and run to right side of coin chassis.

**2.47** Conceal wiring near telephone. If this is not possible, use approved molding or tubing.

**2.48** Locate protectors, connecting blocks, etc. where they will be inaccessible to person using coin telephone set.

**2.49** A 123A1A protector can be installed inside some sets as follows:

- (a) Install the protector inside a 1C- or 1E-type set as shown in Fig. 15 using two P-205607 screws (No. 8-32 by 1/2-inch RHM screw) provided locally.
- (b) Install the protector inside a 2A- or 2C-type set on a 7A clip (Fig. 32). Push the 7A clip, with protector, in the set so its spring loaded flange fastens on the right leg of the

chute lock bracket (Fig. 33). Dress leads to avoid interference with moving parts.

**Caution:** When protector is mounted inside set, bond the protector ground to signal ground (terminal G on coin chassis) with No. 14 AWG wire (Fig. 34).



After installation has been completed, refer to Part 3 and verify that the coin telephone set is operating correctly and that information plate agrees with mode of service. Also verify that entrance stop is adjusted properly to prevent rubbing of parts.

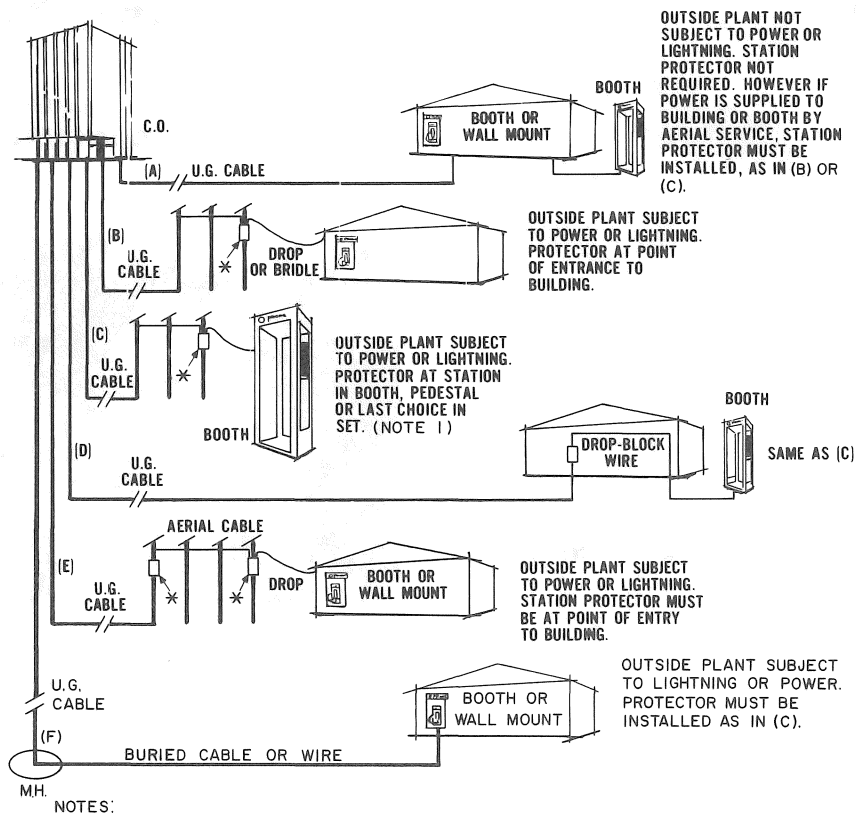
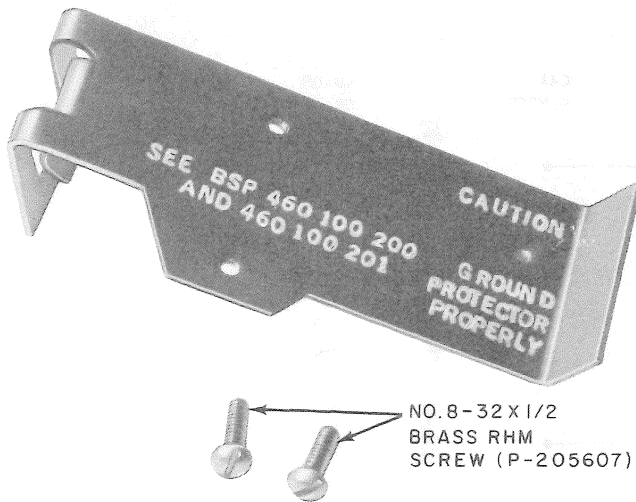
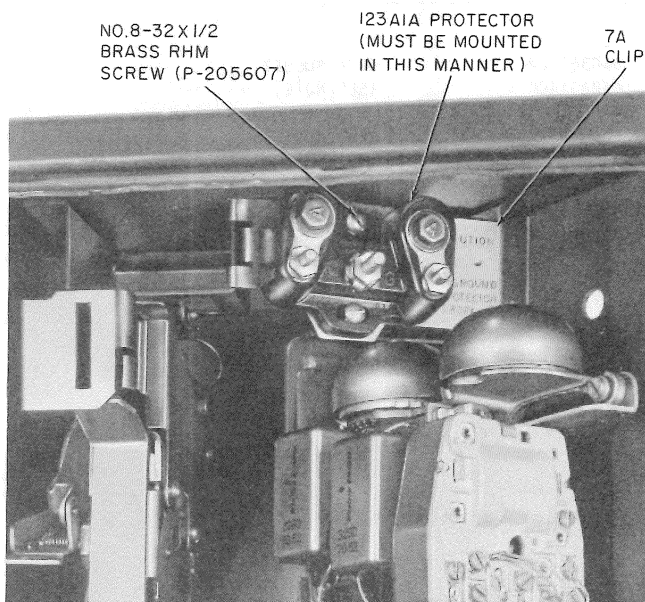


Fig. 31—Grounding Requirements





**Fig. 32—7A Clip For Mounting 123A1A Protector and 840362024 Capacitor Board Assembly in Panel Phone**



**Fig. 33—123A1A Protector Installed in Panel Phone**

### 3. OPERATION TESTS AND TROUBLE ANALYSIS



*On trouble reports of coins collected or returned in error, try to obtain area code and telephone number of called party to facilitate tracing trouble*

*in central office. Refer to Section 506-900-503 or the Coin Maintenance Check Booklet for additional checks and adjustments.*

#### 3.01 Apparatus Required:

- P11C Test Cord (Fig. 35)

**Note:** A KS-20950, List 1 cover parking tool (Fig. 36) may be used with 1-type set in lieu of P11C cord.

- Coins: 1 penny, 2 nickels, 1 dime, 2 quarters
- 146B Bias Margin Gauge (Fig. 37)
- KS-14995, List 3 Coin Trap and Vane Release Tool (Fig. 38).

#### 3.02 Table E includes following trouble analysis tests for ***Coin First Service***:

- Totalizer and Coin Relay Operation (On-Hook)
- Totalizer Operation (Off-Hook)
- Dial Shorting Test
- Trap and Vane Release Test
- Coin Relay Bias Margin Test
- Returning Set to Normal Operation

#### 3.03 Table F includes the following trouble analysis tests for ***Dial Tone First Service***:

- Dial Tone Test
- Totalizer and Coin Relay Operation
- Trap and Vane Release Test
- Coin Relay Bias Margin Test
- Returning Set to Normal Operation

#### 3.04 Table G includes trouble analysis test for ***Dial Post Pay Service***.

#### 3.05 Table H includes trouble analysis test for ***Manual Post Pay Service***.

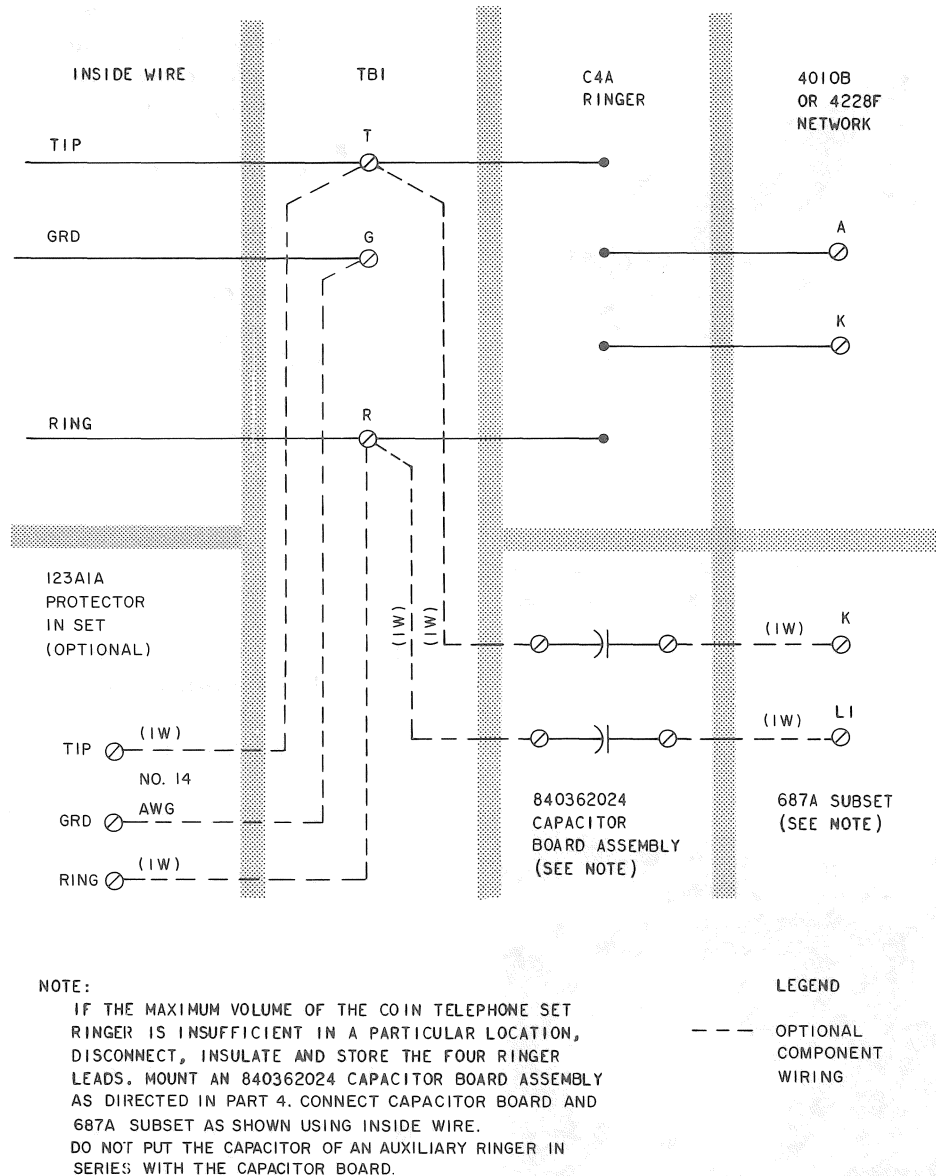


Fig. 34—Optional Ringer and Protector Connections

- 3.06 Refer to Table I for dial Long Line requirements.
- 3.07 Refer to Table J for loop ranges.
- 3.08 Refer to Table K for operate values of coin relays.

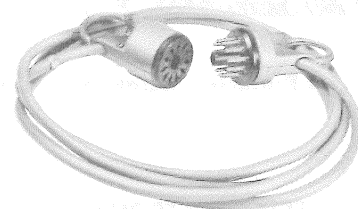


Fig. 35—P11C Test Cord

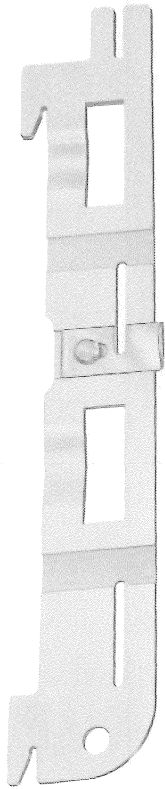


Fig. 36—KS-20950, List 1 Cover Parking Tool

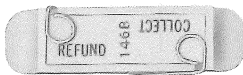


Fig. 37—146B Bias Margin Gauge

MULTISLOT COIN COLLECTOR MAINTENANCE		SINGLE SLOT COIN TELEPHONE SET MAINTENANCE
INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket		INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket
COIN TESTS 5c, 10c, 25c Dial Tone, Coin Return Trouble Analysis		COIN TESTS 5c, 10c, 25c Dial Tone Coin Return On-Hook Coin Return Trouble Analysis
INSPECT INTERIOR Gauge, Connections Security Fasteners Housing Contacts		INSPECT INTERIOR Chute Assembly Connections, Plugs Switchhook
COIN CHUTE Dirt, Corrosion		COIN RELAY Bias Margin, Trap, Vane
SWITCHHOOK Spring Pileups		RESISTANCE TESTS Loop, Ground
COIN RELAY Bias Margin, Trap, Vane		STATION WIRING Ground Connections Protector Booth Ground
RESISTANCE TESTS Loop, Ground		OPERATIONAL TESTS Coins Operator, Ring-Back
STATION WIRING Ground Connections Protector Booth Ground		INSPECT BOOTH Glass, Door, Lights Blower, Directories
OPERATIONAL TESTS Coins Operator, Ring-Back		KS 14995 L3 TOOL
INSPECT BOOTH Glass, Door, Lights Blower, Directories		

Fig. 38—KS-14995, List 3 Tool



**TABLE E**  
**TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)**  
**COIN FIRST**

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
	<b>Preparation For All Tests Except Trap and Vane Release</b>				
1	Invert handset on switch-hook (Fig. 39) (1-type only). Note: Prevents cord from pushing handset off switchhook when cover is set down				
2	For a 1-type set, remove cover unit assembly and hand it on a KS-20950, List 1 cover parking tool (Fig. 36). If parking tool is not available, disconnect P1, place cover unit assembly on a firm level surface, and connect a P11C cord between P1 and J1 of coin chassis.				
3	For a 2-type set, open door and faceplate assembly and connect a P11C cord between P1 and J1.				

TABLE E (Cont)

TROUBLE ANALYSIS — SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
4	Deposit penny and operate coin release lever	Coin is returned	Coin does not return	Blocked coin chute	Clear
				Defective coin release mechanism	Replace defective linkage
5	Deposit quarter in chute	Coin relay refunds coin	Coin does not return	Blocked coin chute	Clear
				Tip and ring reversed or coin trunk trouble	Reconnect or refer to test-desk
				Plugs P1 and P2 reversed	Reconnect properly
				Totalizer plug or mode switch in DTF position. (1C/2C set only)	Reconnect plug or reposition switch
				TB3 not wired correctly (1C/2C set only)	Wire correctly
				Traffic overload	Wait for refund pulse
				Coin jam in hopper	Clear jam
				Full coin receptacle	Level coins and notify coin collection department
				Coin relay HT contacts not making	Clean contacts or replace coin relay

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
5 (Cont)				Switchhook transfer contacts SH1 (NC) or SH3 (NC) not making	Clean contacts or replace dial and housing assembly
				Switchhook contacts SH2 and SH4 not breaking	Adjust contacts or replace dial and housing assembly
				Defective totalizer	Replace defective apparatus
				Defective A relay	
				Defective handset	
				Defective dial (TOUCH-TONE only)	
				Defective wiring in dial housing or chassis assembly	
				Defective coin relay	
				Coin relay improperly wired	Wire properly
6	Deposit nickel	Nickel returned	Nickel does not return	Switchhook transfer contacts SH1 (NC) or SH3 (NC) not making	Clean contacts or replace dial and housing assembly
				TB2 not wired correctly	Wire correctly

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
6 (Cont)				Defective wiring in dial housing or chassis assembly	Replace defective apparatus
				Traffic overload	Wait for refund pulse
7	<b>Totalizer Operation (Off-Hook)</b> Lift handset and deposit nickel in coin chute	No dial tone	Dial tone heard	T1 contacts remain latched after refund	Replace totalizer
				Switchhook transfer contacts SH3 (NC) not breaking (rotary dial sets only)	Replace dial and housing assembly
				Defective chassis or chassis wiring	Replace chassis
				Defective wiring in dial and housing assembly	Replace dial and housing assembly
8	Deposit additional coins up to initial rate	Normal dial tone is heard	No dial tone. Reduced level or intermittent dial tone	Defective handset	Replace handset
				Switchhook contacts SH3 (NO) or SH2 and SH4 (NO) not making	Clean contacts or replace dial and housing assembly
				Switchhook transfer contacts SH1 (NO) not making	

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TRouble NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
8 (Cont)				Totalizer set for more than initial rate	Reset totalizer rate
				T1 contacts (NO) not making	Replace totalizer
				F contacts (NC) not making	
				Defective wiring in dial and housing assembly	Replace dial and housing assembly
				Defective dial	Replace defective apparatus
				Defective chassis	
				Defective totalizer	
				Totalizer transfer contacts T2 (NC) not making (totalizer steps continuously)	Replace totalizer
9	Dial any digit buy “0” or “1”	Dial tone breaks	Cannot break dial tone	Totalizer contacts T1 not latching	Replace totalizer
				Defective dial	Replace defective apparatus
				Defective handset (TOUCH-TONE only)	
				Defective wiring in chassis, or dial and housing	

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
9 (Cont)		Coins not returned	Coins returned	Defective dial	Replace dial
10	Hang up handset	Coins returned	Coins not returned	Traffic overload	Wait for refund pulse
				Coin trunk trouble	Refer to testdesk
11	Lift handset and deposit initial rate	Dial tone is heard	No dial tone	Defective totalizer	Replace totalizer
				Traffic overload	Wait for dial tone
12	Dial any digit but “0” or “1”	Dial tone breaks	Cannot break dial tone	Defective totalizer	Replace totalizer
13	Hang up handset	Coins are returned	Coin not returned	Traffic overload	Wait for refund pulse
				Coin trunk trouble	Refer to testdesk
	Dial Shorting Test				
14	Remove coin relay dust cover. Lift handset and operate hopper trigger by hand	Dial tone heard	No dial tone	Traffic overload	Wait for dial tone
15	Dial any digit but “0” or “1”	Dial tone remains after dialing	Dial tone breaks	Totalizer transfer contacts T1 (NC) not making	Replace totalizer
				Defective chassis	Replace chassis

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
16	Deposit nickel	Dial tone remains after deposit	Line drops off coin returned	Defective chassis	Replace chassis
				Defective A relay (1A/2A only)	Replace A relay
17	Hang up handset	Nickel returns	Nickel does not return	Traffic overload	Wait for coin return pulse
				Defective coin trunk	Refer to testdesk
	Trap And Vane Release Test				
18	Remove chute — totalizer from set				
19	Remove coin relay dust cover				
20	Press downward on left ear of selector card and manually operate coin relay armature to its full extent of travel	Coin vane moves to collect (left) position; coin trap moves downward			
21	With armature fully operated, insert KS-14995, L3 tool into hopper to operate trap to the limit of its travel (Fig. 40)				

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
22	Release armature and slowly withdraw tool	Armature, trap, and vane should return to nonoperated position and trap should be locked	Armature, trap, or vane does not return to its normal position	Relay could be mounted in a binding position	Loosen mounting screws and re-align relay; tighten screws
			Vane does not restore properly	Vane binds	Replace relay
				Vane broken	Remove coin relay from hopper and free vane
			Trap does not operate, restore, or lock properly	Trap broken	Replace vane per Section 506-100-110
				Trap spring bent or broken	Replace defective apparatus
				Trap lever broken	
				Trap pin bent or broken	
23	Press downward on right ear of selector card and manually operate coin relay armature to its full extent of travel	Coin vane moves to refund (right) position; coin trap moves downward			



TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
24	With armature fully operated, insert KS-14995, L3 tool into hopper to operate trap to the limit of its travel (Fig. 40)				
25	Release armature and slowly withdraw tool	Same as 22	Same as 22	Same as 22	Same as 22
26	Install dust cover				
27	Install chute — totalizer				
	<b>Coin Relay Bias Margin Test</b>  <i>Note:</i> Make this test when coin relay fails to operate or operates incorrectly				
28	Remove coin relay dust cover				
29	Lift handset, obtain dial tone, call testdesk and request a bias margin test. (Use central office test circuit where available)				

TABLE E (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
30	Slip 146B bias margin guage over left pole-piece extension arm from left side of coin relay (Fig. 41)				
31	Request deskman to apply central office collect (or return) voltage as indicated in the lower left corner of gauge	Relay operates to collect (or return) coins as indicated in lower left corner of gauge	Relay does not operate properly	Defective coin relay	Replace coin relay
32	Reverse the 146B bias margin gauge by turning it around on the same polepiece extension arm				
33	Request deskman to apply central office collect (or return) voltage as indicated on the left corner of gauge	Relay operates to collect (or return) coins as indicated in lower corner of gauge	Relay does not operate properly	Defective coin relay	Replace coin relay
34	Remove 146B gauge				
35	Hang up handset				
36	Install dust cover				

TABLE E (Cont)

**TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
COIN FIRST**

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
	<b>Returning Set To Normal Operation</b>				
37	Call operator and deposit nickel, dime, and quarter	Coins identified by operator	Improper coin signal tones	Defective totalizer Defective chassis	Replace totalizer Replace chassis
38	Listen for coin tones in handset as coins are deposited	No coin tones heard in handset	Coin tones heard in handset	Defective chassis	Replace chassis
39	Request operator to return coins	Coins returned	Coins not returned	Nonstation trouble	Repeat request, and if failure reoccurs refer to testdesk
40	Request operator to ring back (hang up)	Ringer operates at maximum volume	No ringback or low volume	Defective ringer or leads Ringer out of adjustment Open ringer capacitor in network	Replace ringer  Adjust  Replace chassis
41	Call the dial test number and verify all TOUCH-TONE frequencies (if applicable)				

TABLE F

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
	<b>Preparation For All Tests Except Trap and Vane Release</b>				
1	Invert handset on switch-hook (Fig. 39) (1-type only) Note: Prevents armored cord from pushing handset off switchhook when cover is set down				
2	For a 1-type set, remove cover unit assembly and hang it on a KS-20950, List 1 cover parking tool (Fig. 36), If parking tool is not available, disconnect P1, place cover unit assembly on a firm level surface, and connect a P11C cord between plug P1 and jack J1 of the coin chassis.				
3	For a 2-type set, open door and faceplate assembly and connect a P11C cord between P1 and J1.				

TABLE F (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
4	Lift handset	Dial tone received	No dial tone	Dial Tone Test	
				Defective handset	Replace handset
				Traffic overload	Wait
				Switchhook contacts SH1 (NO), or SH2 and SH4 (NO), not making	Clean contacts or replace dial and housing assembly
				Plugs P1 and P2 reversed	Reconnect properly
				Totalizer plug in PP position or mode switch in CF position (1C/2C only)	Reconnect plug or reposition switch.
				TB2 not wired correctly	Wire correctly
				TB3 not wired correctly (1C/2C only)	Wire correctly
				Defective totalizer	Replace totalizer
				Defective wiring in chassis, or dial and housing assembly	Replace defective apparatus
				Nonstation trouble	Refer to testdesk

TABLE F (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE ACTION	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
5	Deposit quarter	Quarter does not return	Quarter falls in return bucket	TB3 not wired correctly (1C/2C only)	Wire correctly
				Chute path blocked	Clear
				Defective totalizer	Replace defective apparatus
				Defective chassis	
6	Depress switchhook	Quarter is returned	Quarter does not return	Switchhook contacts SH2 (NO) and SH4 (NO) not breaking	Replace dial and housing assembly
				Defective coin trunk	Refer to testdesk
				Defective totalizer	Replace defective apparatus
				Defective chassis	
				Defective coin relay	
7	Deposit nickel, dial a number that requires initial deposit	Dial tone breaks	Dial tone does not break	Defective dial	Replace dial
				Tip, ring, or grd reversed	Wire correctly
		Recording states that insufficient deposit was made	Recording is not heard	Defective chassis	Replace chassis
				Initial rate set for 5 cents	Reset totalizer rate
				TB3 not wired correctly (1C/2C only)	Wire correctly

TABLE F (Cont)  
TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
7 (Cont)				Totalizer contacts T1 making for nickel deposit	Reset totalizer rate or replace totalizer
				Defective chassis	Replace chassis
8	Depress switchhook	Coin returned	Coin not returned	Switchhook contacts SH2 (NO) or SH4 (NO) not breaking	Replace dial and housing assembly
				Defective coin trunk	Refer to testdesk
				Defective totalizer	Replace defective apparatus
				Defective chassis	
				Defective coin relay	
9	Deposit initial rate, dial a number that requires a deposit <u>Note:</u> Ensure that called number will not be answered.	Tone ringing heard in handset	Insufficient deposit recording heard	Initial rate set for more than the deposit	Reset totalizer
				Defective T1 or F contacts in totalizer	Replace totalizer
				Defective chassis	Replace chassis
				Switchhook SH3 (NO) not making	Clean contacts or replace dial housing
				TB3 not wired correctly (1C/2C only)	Wire correctly
10	Hang up handset	Coins are returned	Coins not returned	Defective coin trunk	Refer to testdesk

TABLE F (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
11	Deposit penny and operate coin release lever	Penny is returned	Coin does not return	Defective coin chute	Clear
				Defective coin release mechanisms	Replace defective linkage
	Trap and Vane Release Test  Note: Refer to Table E.  Coin Relay Bias Margin Test  Note: Refer to Table E.  Returning Set To Normal Operation				
12	Call operator and deposit nickel, dime, and quarter	Coins identified by operator	Improper coin signal tones	Defective totalizer	Replace totalizer
				Defective chassis	Replace chassis
13	Listen for coin tones in handset as coins are deposited	No coin tones heard in handset	Coin tones heard in handset	Defective chassis	Replace chassis
14	Request operator to return coins	Coin returned	Coins not returned	Nonstation trouble	Repeat request, and if failure reoccurs refer to testdesk
15	Request operator to ring back (hang up)	Ringer operates at maximum volume	No ringback or low volume.	Defective ringer or leads	Replace ringer
				Ringer out of adjustment	Adjust
				Open ringer capacitor in network	Replace chassis



TABLE F (Cont)

TROUBLE ANALYSIS – SINGLE SLOT (1A/1C- AND 2A/2C-TYPE)  
DIAL TONE FIRST

TROUBLE NUMBER	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
16	Call the dial test number and verify all TOUCH- TONE frequencies (if applicable)				

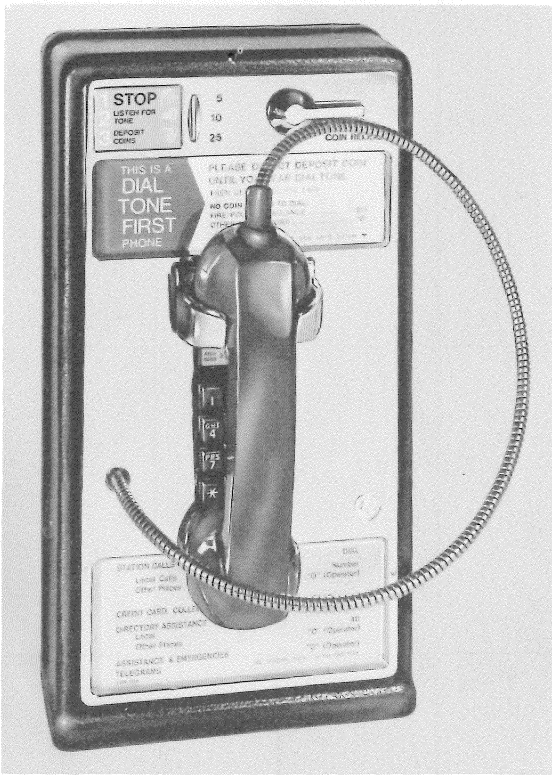


Fig. 39—Cover Unit Assembly With Handset Inverted

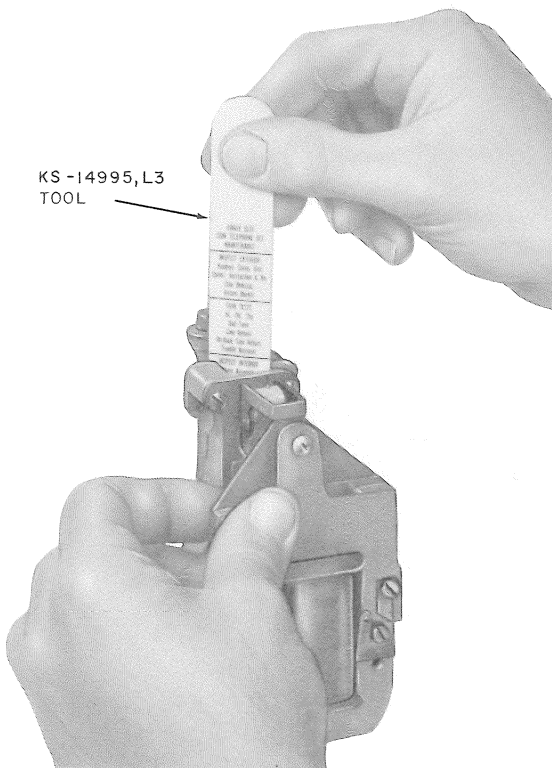
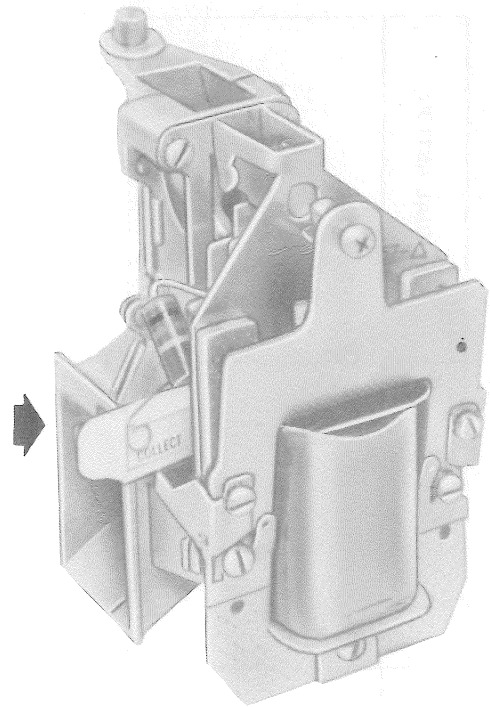
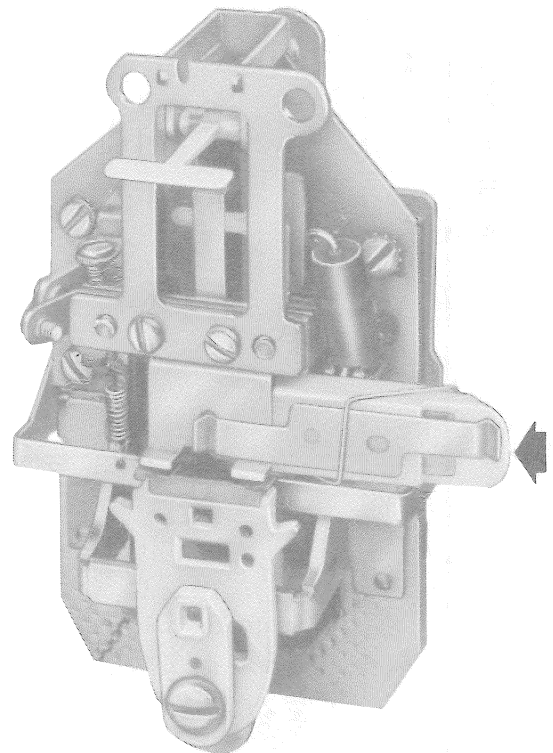


Fig. 40—Trap and Vane Release Test



SIDE VIEW



BACK VIEW

Fig. 41—Bias Margin Gauge in Position for Collect Test

TABLE G  
TROUBLE ANALYSIS – IE1

TROUBLE NO.	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
1	Invert handset on switchhook. <i>Note:</i> Prevents armored cord from pushing handset off switchhook when cover is set down.				
2	Remove cover unit assembly and disconnect plug P1. Place cover unit assembly on a firm level surface.				
3	Connect P11C cord between plug P1 and jack J1 of coin chassis or use a KS-20950 cover parking tool.				
4	Install KS-14995, L3 tool between coin chute and hopper to catch deposited coins.				
5	Lift handset.	Dial tone received.	No dial tone.	Defective handset.	Replace handset.
				Traffic overload.	Wait and repeat test.
				Switchhook contacts SH1 (NO), or SH2 & SH4 (NO), not making.	Clean contacts or replace dial and housing assembly.

				Plugs P1 and P2 reversed.	Reconnect properly.
				Totalizer mode switch in CF position.	Reposition switch to DTF.
				TB2 not wired correctly.	Wire correctly.
				Defective totalizer.	Replace totalizer.
				Defective wiring in chassis, or dial and housing assembly.	Replace defective apparatus.
				Nonstation trouble.	Refer to testdesk.
6	Dial operator.	Dial tone breaks.	Dial tone does not break.	Defective dial.	Replace defective apparatus.
				Defective chassis.	
				TB2 not wired correctly.	Verify wiring.
				Nonstation troubles.	Refer to testdesk and correct trouble.
		Operator answers.	Transmission path not established.	Defective handset.	Replace handset.
7	With operator on line, deposit nickel, dime, and quarter.	Operator identifies proper signal tones.	Operator cannot identify proper signal tones.	Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				446F diode damaged.	
				Ring and tip reversed.	Correct

TABLE G (Cont)  
TROUBLE ANALYSIS – IE1

TROUBLE NO.	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
8	Listen for coin tones in handset as coins are deposited.	Tones should not be heard.	Tones are heard.	Defective chassis.	Replace chassis.
9	Disengage chute locking spring; <i>slowly pull top of chute forward while holding KS-14995, L3 tool.</i> Lift chute and tool out of set and retrieve coins.				
10	Check for noise or cut-out in handset cord.	Noise should not be heard.	Noise is heard.	Defective handset.	Replace handset.
11	Request operator to call back.	Ringer operates at maximum volume.	No ringer or rings at low volume.	Improper line assignment.	Verify and correct.
				Defective ringer.	Replace ringer or chassis.
				Ringer out of adjustment.	Adjust.
				Open capacitor in network.	Replace chassis.
12	Repeat step 4, deposit initial rate, and request operator to identify coin signal.	Identification properly made.	Identification cannot be made.	Nonstation troubles.	Refer to testdesk.
13	Repeat step 9, thank operator, and hang up.				

14	Lift handset, obtain dial tone, and dial a local charge number (this should be pre-arranged).	Ringing tone heard — When called party answers, deposit coin tone should be heard.	Ringing tone not heard.	Traffic overload.	Wait and repeat test.
			Deposit coin tone not heard.	Nonstation troubles.	Refer to testdesk.
15	Deposit nickel.	Deposit coin tone remains.	Deposit coin tone stops.	Initial rate set for 5 cents.	Reset totalizer.
				Wrong code totalizer or defective totalizer.	Replace totalizer.
			Totalizer reads out.	Defective chassis.	Replace chassis.
16	Deposit additional coins up to initial rate.	Deposit coin tone stops and talk path is established.	Deposit coin tone does not stop.	Initial rate set for more than the deposit.	Reset totalizer.
				Defective hopper.	Replace defective apparatus.
				Defective totalizer.	
				Nonstation troubles.	Refer to testdesk.
17	Hang up.	Totalizer restores.	Totalizer does not restore.	Defective dial and housing assembly.	Replace defective apparatus.
				Defective chassis.	
18	Return set to normal operation.				

TABLE H  
TROUBLE ANALYSIS – IE3

TROUBLE NO.	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
1	Invert handset on switchhook. <i>Note:</i> Prevents armored cord from pushing handset off switchhook when cover is set down.				
2	Remove cover unit assembly and disconnect plug P1 — place cover unit assembly on a firm level surface.				
3	Connect P11C cord between plug P1 and jack J1 of coin chassis or use a KS-20950 cover parking tool.				
4	Install KS-14995, L3 tool between coin chute and hopper to catch deposited coins.				
5	Lift handset.	Operator should answer.	Operator does not answers.	Defective handset.	Replace defective apparatus.
				Defective chassis.	
				Defective switchhook.	
				TB2 not wired correctly.	Verify and correct.
				Nonstation troubles.	Refer to testdesk.

6	With operator on line, deposit nickel, dime, and quarter.	Operator identifies proper signal tones.	Operator cannot identify proper signal tones.	Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				Ring and tip reversed.	Correct.
				Totalizer mode switch in CF position.	Reposition switch to DTF.
7	Listen for coin tones in handset as coins are deposited.	Tones should not be heard.	Tones are heard.	Defective chassis.	Replace chassis.
8	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, L3 tool. Lift chute and tool out of set and retrieve coins.				
9	Check for noise of cut-out in handset cord.	Noise should not be heard.	Noise is heard.	Defective handset.	Replace handset.
10	Request operator to call back.	Ringer operates at maximum volume.	No ringing or rings at low volume.	Improper line assignment.	Verify and correct.
				Defective ringer.	Replace ringer or chassis.
				Ringer out of adjustment.	Adjust.
				Open capacitor in network.	Replace chassis.
11	Install KS-14995, L3 tool between coin chute and hopper to catch deposited coins.				



TABLE H (Cont)

## TROUBLE ANALYSIS – IE3

TROUBLE NO.	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
12	Deposit a coin and request operator to identify coin signal.	Identification properly made.	Identification cannot be made.	Nonstation troubles.	Refer to testdesk.
13	Thank operator and hang up.				
14	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, L3 tool. Lift chute and tool out of set and retrieve coins.				
15	Return set to normal operation.				

**TABLE I**  
**REQUIREMENTS FOR DIAL LONG LINE CIRCUITS ON COIN LINES**  
**(FOR LIMITATIONS OTHER THAN COIN CONTROL)**  
**(ASSUMES 300-OHM STATION SET RESISTANCE)**

TYPE OF CENTRAL OFFICE	REQUIREMENTS
Step-by-Step	DLL CKT Required on Loops Over 1050 ohms
Panel	DLL CKT Required on Loops Over 885 ohms
No. 1 Crossbar	DLL CKT Required on Loops Over 1200 ohms
No. 5 Crossbar	DLL CKT Required on Loops Over 1300 ohms
No. 1 ESS	DLL CKT Required on Loops Over 1300 ohms
No. 2 ESS	DLL CKT Required on Loops Over 1300 ohms

**TABLE J**  
**MAXIMUM ALLOWABLE LOOP RANGES FOR CENTRAL OFFICE**  
**COIN SUPPLY VOLTAGES — COLLECT AND RETURN ONLY**  
**(MAXIMUM GROUND RESISTANCE 50 OHMS;**  
**MAXIMUM DC EARTH POTENTIAL  $\pm 3$  VOLTS)**

TYPE OF CENTRAL OFFICE	MINIMUM COIN VOLTAGE	LOOP RANGE
SXS, Panel, No. 1 XBar	100 volts (100-120V)	1400 ohms
SXS, Panel, No. 1 XBar	115 volts (115-120V)	2000 ohms
No. 5 XBar, No. 1 ESS, No. 2 ESS	125 volts (125-135V)	2400 ohms

**Note:** Loop Range = Conductor Loop Resistance (excluding coin telephone set resistance).

**TABLE K**  
**OPERATE VALUES OF COIN RELAYS**

MARKING ON RELAY	OPERATING TIME	OPERATE CURRENT	NON-OPERATE CURRENT	REMARKS
P-15E687	625 $\pm$ 75 milliseconds (Note 2)	48 milliamps	40 milliamps	Coil of restoral spring has a diameter of approximately 5/32-inch (Fig. 28)
1A*	450 $\pm$ 50 milliseconds (Note 3)	41 milliamps	30 milliamps	Coil of restoral spring has a diameter of approximately 9/32-inch (Fig. 29)
1A (Note 1)				

**Notes:**

1. Coin relays marked 1A without the asterisk symbol have bifurcated rather than solid contact springs.
2. The timing interval of 625 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 6.
3. The timing interval of 450 milliseconds may be compared with the time it takes for a rotary dial to return to normal after dialing digit 4.

## 4. MAINTENANCE

## Clearing Chute of Foreign Material or Stuck Coin

**4.01** When troubles indicate foreign objects or stuck coins in chute:

- (a) Operate coin release lever in attempt to clear coins in return chute.
- (b) If trouble does not clear:
  - (1) Remove cover unit assembly (1-type) or open door and faceplate assembly (2-type).
  - (2) Remove chute-totalizer.
  - (3) Swing upper plate assembly open (Fig. 42).
  - (4) Where possible, use an orange stick to remove any foreign objects or stuck coins. Do not use screwdriver. Do not loosen chute assembly screw.
  - (5) Clean off any foreign material adhering to chute magnets.



*Exercise extreme care when closing the upper plate assembly. If the quarter divider is not positioned properly, it will become damaged when the upper plate assembly is closed against it.*

**4.02** If trouble cannot be cleared using an orange stick, use a 787A tool (Fig. 43) as follows:

- (a) Remove totalizer from chute.
- (b) Swing upper plate assembly open per Fig. 43.

**Note:** Several conditions can be encountered with dime jams. Most jams involve only two or three dimes but others may involve as many as six dimes blocked at both ends as shown in Fig. 44, with the top two overlapped.

- (c) If two dimes are only partially overlapped, the top dime can be hooked on the face and pulled out as shown in Method I (Fig. 45).

(d) If a more difficult condition exists where two dimes are completely overlapped as shown in Fig. 44, proceed as follows:

- (1) Begin unjamming the dimes by inserting the 787A tool as shown in Method II (Fig. 45), hooking onto the dime's edge, and pulling up.

**Caution:** *Do not pull the two overlapped dimes past the lower dime divider leg as long as the tool is hooked on the dime's edge.*

- (2) If the overlapped dimes move up together as shown in Method II, any dimes below this area can probably be shaken out and access to the overlapped dimes obtained through the channel from below as shown in Method III. Once the two dimes become only partially overlapped (Method III), utilize Method I to finish extracting them.

**4.03** Test chute by depositing coins with cover unit assembly both off and on housing (1-type) or with door and faceplate assembly both opened and closed (2-type).

**4.04** If trouble cannot be cleared, replace chute.



*When returning chute-totalizer to service center, reuse packing material from which the new item was removed.*

## Electrical Troubles

**4.05** If electrical troubles are indicated, refer to Part 3 (Operation Tests and Trouble Analysis) and Part 7 (Connections).

**4.06** Refer to Part 2 for the removal and replacement of the following components:

- Chute-totalizer
- Chute
- Totalizer
- Coin chassis
- Instruction cards
- Number cards

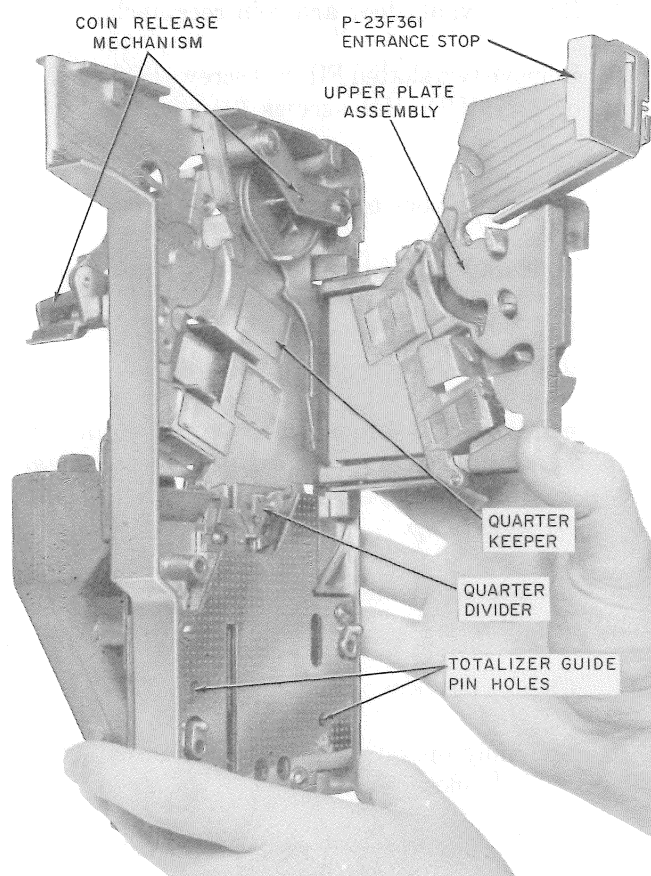


Fig. 42—Chute

**4.07** Components other than those listed in 4.06 can be removed as outlined below.

#### 1A Coin Relay (1A/2A/1C/2C Sets Only)

**4.08** To remove 1A coin relay without removing hopper assembly:

- (1) Disconnect (BK) and (Y) leads.
- (2) Remove two relay mounting screws on top front of coin relay (Fig. 15).
- (3) Remove two slotted HEX HD screws on sides of coin relay.
- (4) Check that the hopper trigger (Fig. 46) is in horizontal (up) position and pull off coin relay. **Do not damage hopper trigger.**

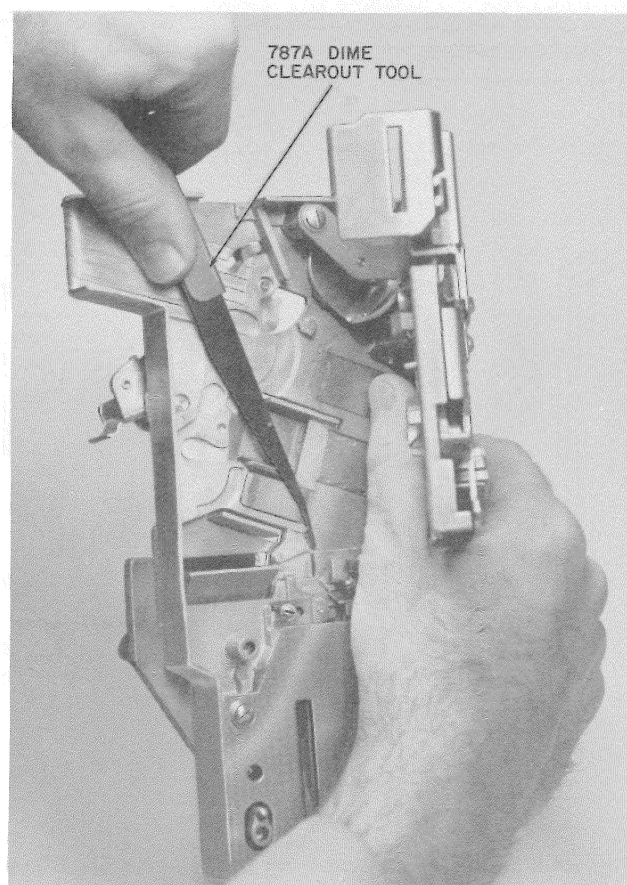


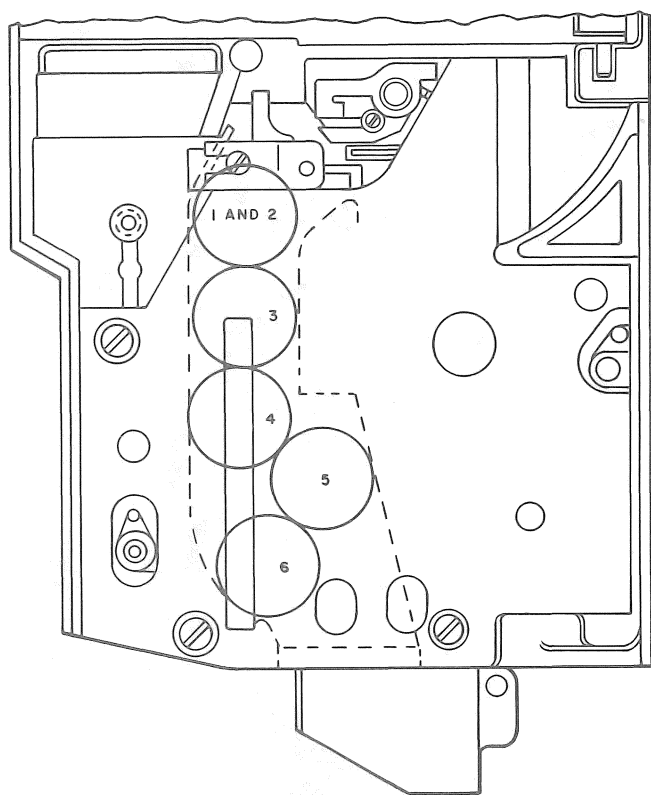
Fig. 43—Using a 787A Dime Clearout Tool in Chute



*When returning defective 1A coin relays to service center, reuse packing material from which the replacing item was removed.*

**4.09** To install 1A coin relay (Fig. 46):

- (1) Move coin vane to left (or collect) position.
- (2) With hopper trigger in nonoperated (or horizontal) position, move relay into position until trigger enters T-shaped slot in hopper and trap lever tab just enters opening in selector card.
- (3) Press down slightly on ear of left side of selector card and manually move armature forward to its operated position. Hold armature in this position.
- (4) Move coin relay forward until square stem on vane enters hole in cam and mounting screw holes line up.



**Fig. 44—Lower Portion of Coin Chute With Six Dimes Jammed**

**Note:** Do not attempt to install relay if trigger support bracket is so distorted that mounting holes do not engage hopper bosses.

- (5) Place and tighten evenly two mounting screws on top of coin relay and two slotted hex head mounting screws in each side of relay.
- (6) Make sure that trigger, armature, trap, and vane operate without binding. Refer to trap and vane release test in Table E.
- (7) Reconnect (Y) lead to terminal G and (BK) lead to terminal 3.

#### Coin Hopper

##### 4.10 To remove coin hopper:

- (1) Remove coin relay from 1A/2A/1C/2C sets.
- (2) In 1E1 sets, disconnect (G) and (S-R) leads from hopper.

- (3) Remove vault door and coin receptacle.
- (4) Remove two slotted FIL HD screws (840503676) or two HEX HD screws (840696926) from inside vault.

- (5) Lift hopper out of set.

##### 4.11 To install coin hopper, use reverse procedure.

- (1) For 1E1 sets, connect (G) and (S-R) leads to hopper in accordance with Fig. 69.

**Caution:** Observe polarity of diode on 50A hopper. Do not torque the terminal screws excessively to avoid canting the spring pile-up.

#### Coin Trap and Associated Parts (1A/2A/1C/2C Sets Only)

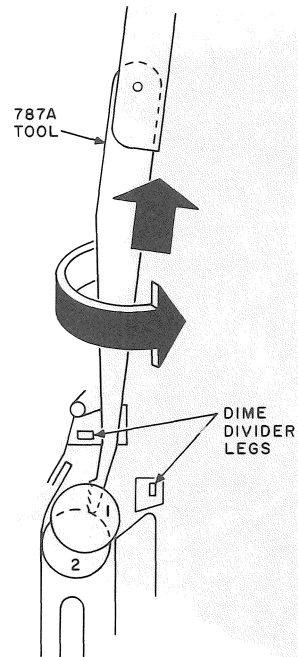
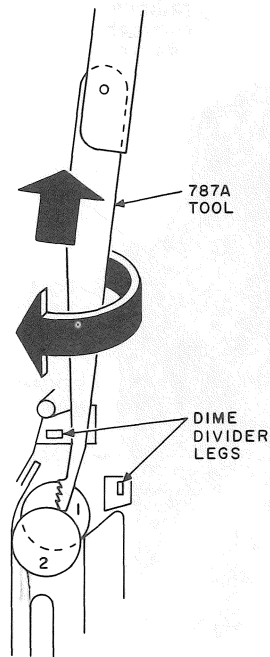
##### 4.12 Check coin trap spring tension as follows:

- (1) Manually operate the coin relay armature to its fully closed position.
- (2) Allow relay to slowly return to its nonoperate position.
- (3) Insert KS-14995, List 3 tool into hopper (Fig. 40). Apply firm downward pressure with tool on coin trap in hopper throat; but **DO NOT FORCE** down enough to bend or break parts.
- (4) If this firm **but not excessive** downward force does not cause the trap lever spring to release the trap, the existing spring is operating adequately. If the trap is released by this action, a new 840157333 wire spring should be installed.

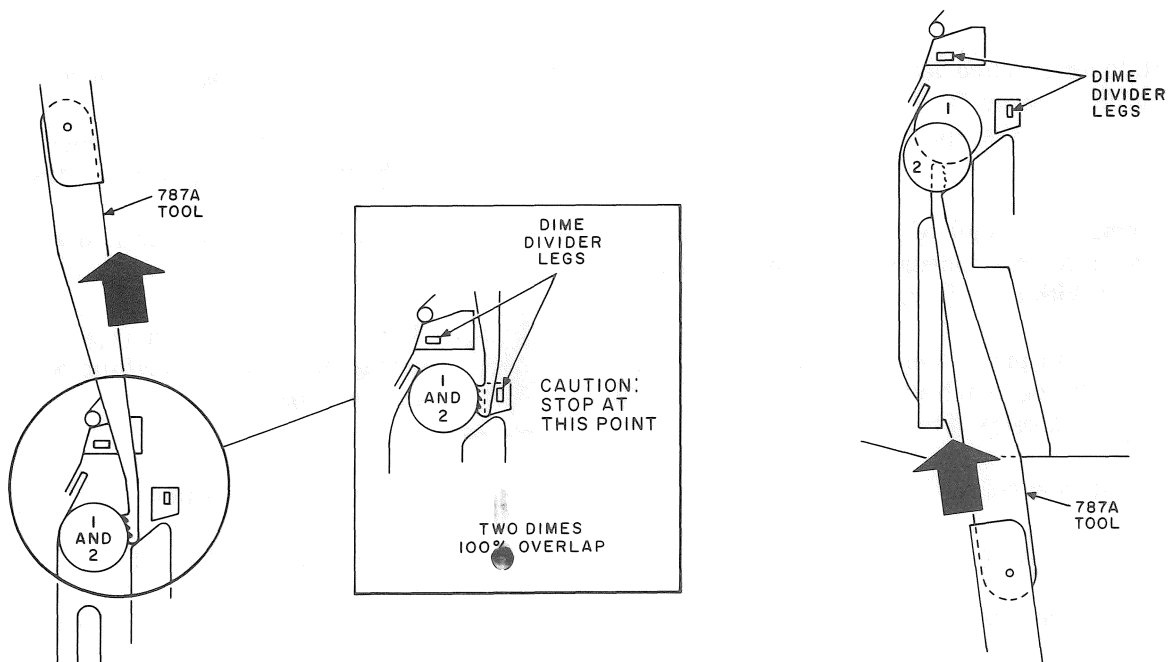
##### 4.13 Install 840157333 trap lever spring as follows (Fig. 47):

**Note:** A weakened or broken phosphor bronze spring can remain in the hopper assembly after the new wire type spring is installed.

- (1) Remove coin relay, if applicable.
- (2) Move trap pin to the right so that left end of pin is flush with hopper guide (Step 1).



METHOD I



METHOD II

METHOD III

Fig. 45—Method for Removing Jammed Dimes From Chute

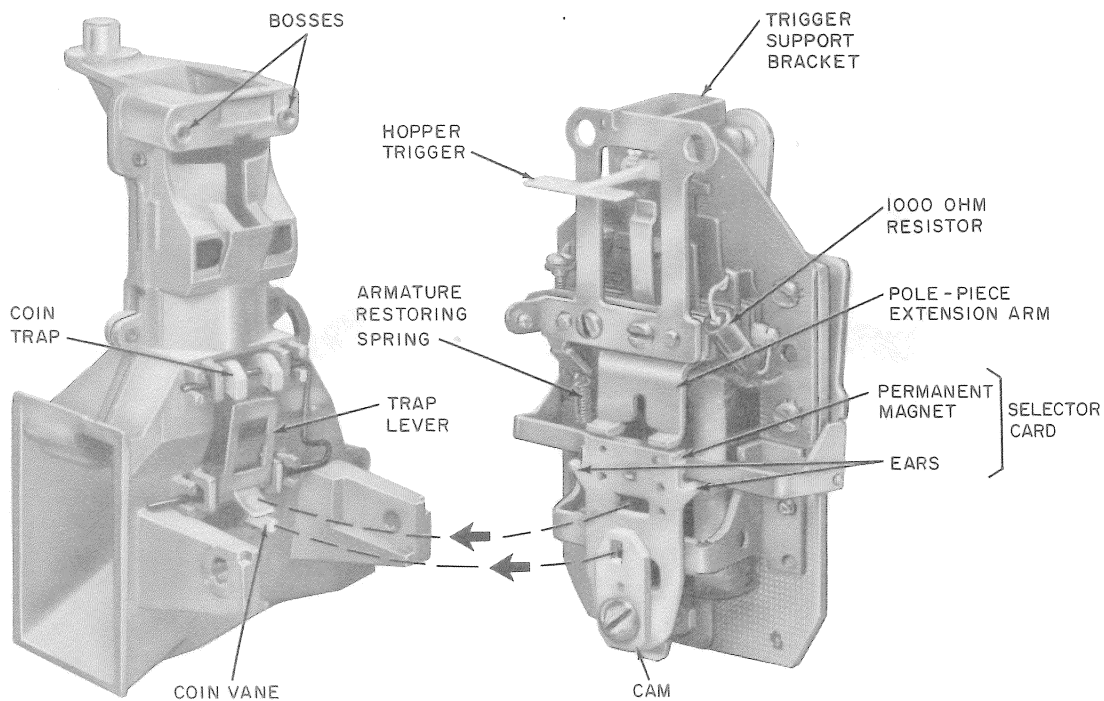


Fig. 46—Coin Hopper and Rear View of Coin Relay

(3) Holding notched left leg of new spring at an angle away from hopper, slide the right notched leg of the spring under trap pin (Step 2).

(4) Swing loose end of spring across face of trap lever and position notch of left leg in alignment with end of trap pin (Step 3).

(5) Push trap pin to the left, over and through the left leg notch of the new spring, until the trap pin detents (Step 4).

(6) Install coin relay, if applicable.

#### 4.14 To remove trap lever and coin trap:

- (1) Remove coin relay from hopper, if applicable.
- (2) Move vane to right.
- (3) Remove trap pin (Fig. 48) by sliding vertical portion over boss on front of hopper.
- (4) Turn coin trap sideways and remove through opening.

#### 4.15 To replace coin trap and trap lever.

- (1) Partially insert trap pin into hole in hopper (Fig. 49) and place trap lever on trap pin.
- (2) Insert coin trap in hopper and engage pin in trap (Fig. 50).



**Always use the wire-type trap lever spring (4.13) when installing or replacing a coin trap.**

- (3) Push trap pin into position.
- (4) Check operation per Table E.
- (5) Install relay on hopper, if applicable.

#### Return Chute Assembly

#### 4.16 To remove return chute assembly:

- (1) Remove chute-totalizer.
- (2) Loosen return chute screw (Fig. 15).

- (3) Lift assembly up and off.

**4.17** To replace return chute assembly, reverse procedure.

#### **Coin Return Assembly**

**4.18** To remove coin return assembly:

- (1) Remove chute-totalizer.
- (2) Remove return chute assembly.
- (3) Remove coin return assembly locking screw (Fig. 15).
- (4) Insert finger in coin return and tilt top forward.
- (5) Lift coin return. Pull coin return assembly out and up.

**4.19** To install coin return assembly:

- (1) Tilt top of coin return assembly toward set.
- (2) Push coin return assembly into set.
- (3) Push in and down on bottom of coin return assembly until flush with front of housing.
- (4) Install coin return assembly locking screw. Tighten screw only enough to hold return assembly in place. Further tightening will bend screw.
- (5) Replace return chute assembly.
- (6) Replace chute-totalizer.

#### **Ringer**

**4.20** To remove C4-type ringer:

- (1) Remove chute-totalizer.
- (2) Remove coin chassis.
- (3) Disconnect four ringer leads; two from TB1 and two from network.
- (4) Remove two ringer mounting screws and lift off ringer.

**4.21** To install C4-type ringer, reverse procedure making sure that locating pin on bottom of ringer is in grommet on chassis assembly. Make connections per Table L.

#### **Auxiliary Ringer**

**4.22** Where high ambient noise makes it difficult to hear the C4-type ringer in the coin telephone set, a 687A subscriber set can be used to improve the situation. Install the 687A subscriber set as follows:

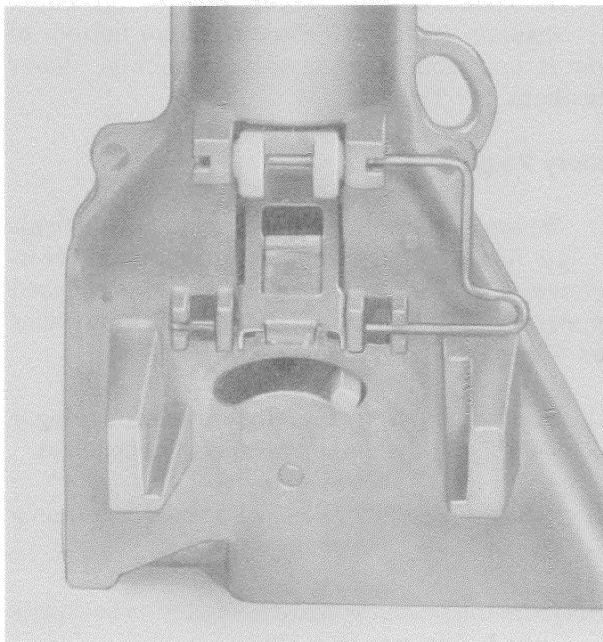
- (1) Disconnect, insulate, and store the four ringer leads from the ringer in coin telephone set.
- (2) Install an 840362024 capacitor board assembly (Fig. 51).
  - (a) Install capacitor board assembly on backplate in 1-type sets (Fig. 52).
  - (b) Install capacitor board assembly on rear of 7A clip in panel sets (Fig. 53).
- (3) Interconnect 687A subset and capacitor board assembly, using inside wire, as shown in Fig. 34.

#### **Handset**

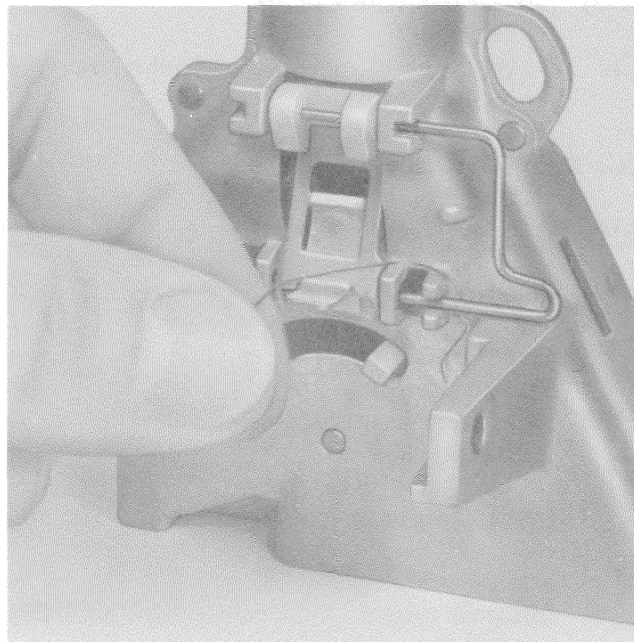
**4.23** The G3AD- and G3AF-type handsets previously used on single slot coin telephone sets are replaced with G3AH and G3AK coded handsets respectively, which have the following features:

- (1) They are equipped with an LB-type receiver unit and special field coil adapter in the handset which provides a uniform magnetic field of use to hard-of-hearing customers having inductive pick up-type hearing aids.
- (2) The new handsets can be readily identified by the Bell System blue-colored rubber grommet around the armored cord at the transmitter end of the handle.
- (3) The G3AK-type handset is equipped with a moisture-proof transmitter barrier and special transmitter cap to drain moisture condensation.
- (4) Transmitter and receiver caps are bonded to the handle to discourage removal.

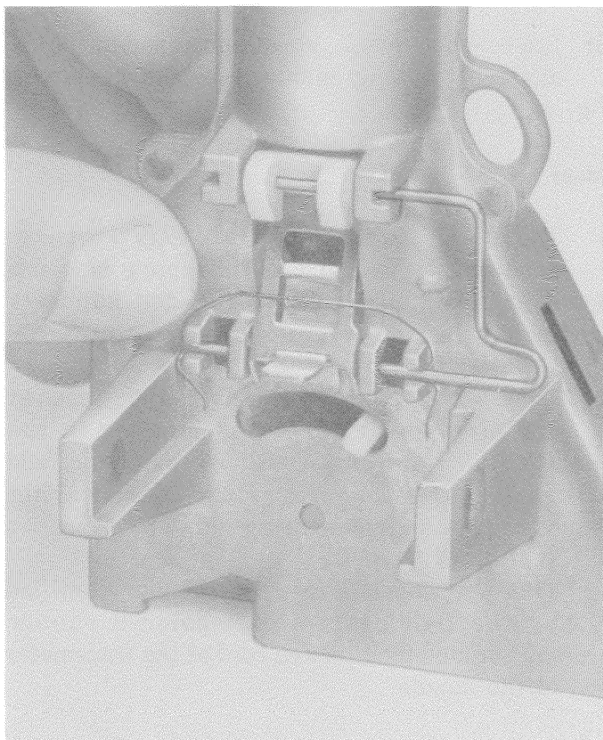




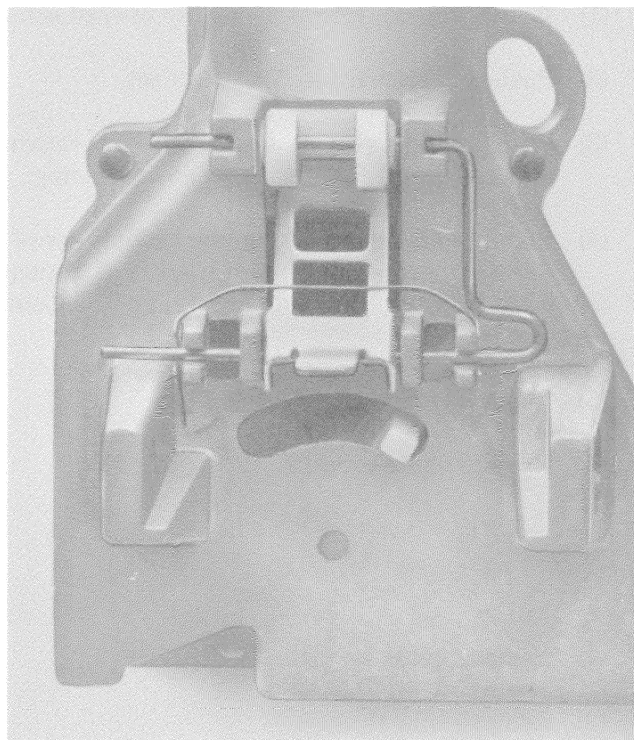
STEP 1



STEP 2



STEP 3



STEP 4

**Fig. 47—Installing 840157333 Trap Lever Spring**

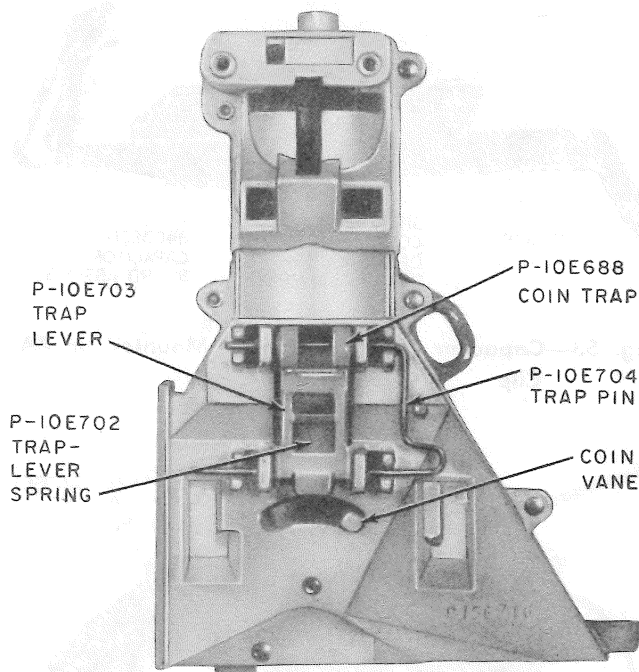


Fig. 48—Coin Trap and Trap Lever Assembly

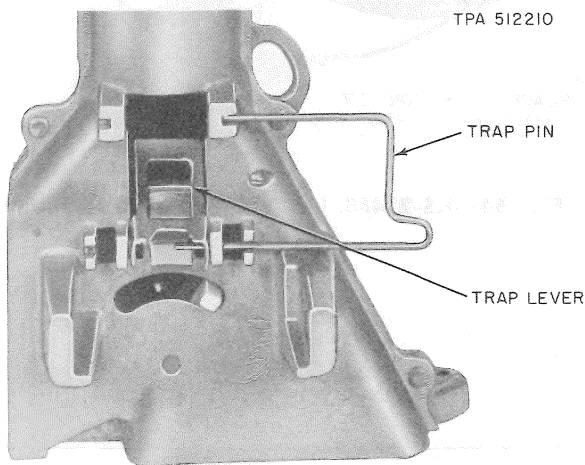


Fig. 49—Placing Trap Lever Pin on Hopper

**4.24** Test the G3AH or G3AK handset to determine if the field coil adapter in the handset is working correctly, as follows:

- (1) Place a KS-21468, List 1 tone pick-up coupler (Fig. 54) around the receiver cap of handset.

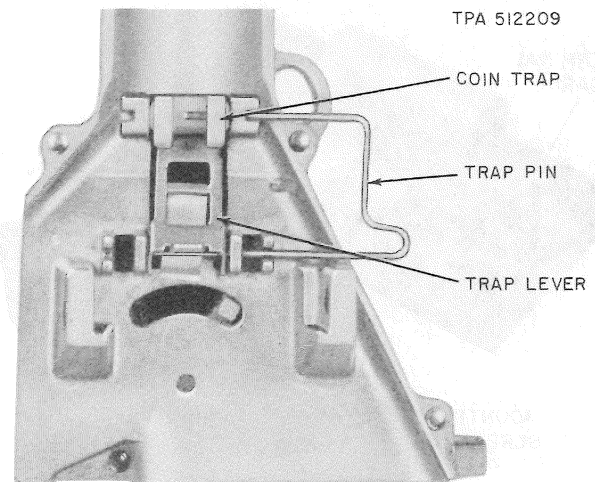


Fig. 50—Placing Coin Trap in Hopper

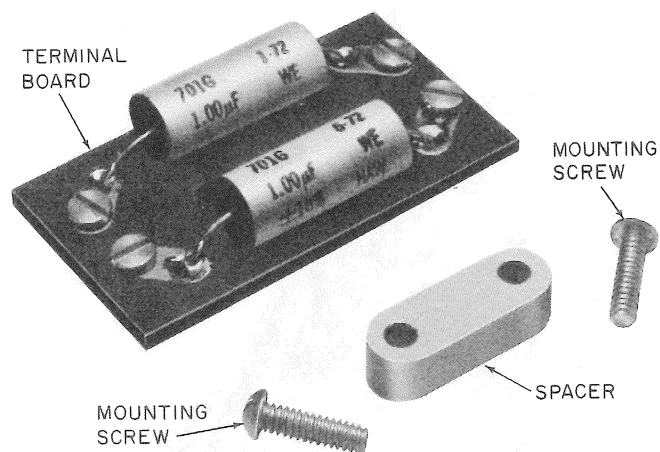
**TABLE L**  
**RINGER CONNECTIONS**

WIRE COLOR	CONNECT TO
BK	TB1-T
R	TB1-R
S-R	Term. A (Network)
S	Term. K (Network)

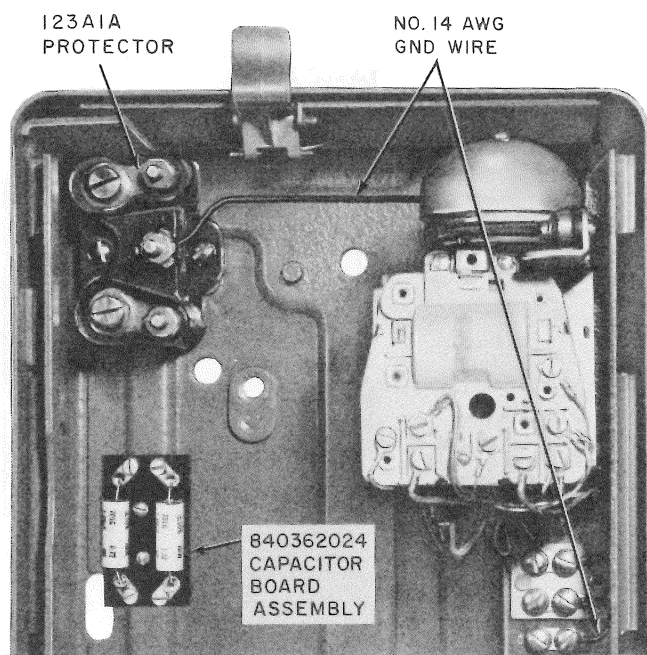
- (2) Clip a lineman's test set to the two tone coupler terminals.
- (3) Place the TALK-MONITOR switch in the TALK position.
- (4) Dial the 1000 Hz test number from the coin telephone set, then listen in the test set receiver for the 1000 Hz tone.
- (5) If the tone is not heard the field coil adapter is defective and the coin phone handset should be replaced.

**4.25** To remove handset:

- (1) Disconnect handset leads from terminal board (TB2) on rear of dial housing.



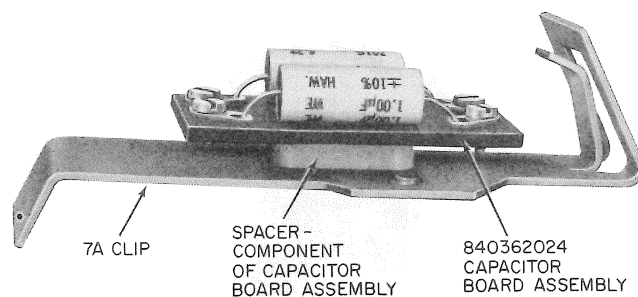
**Fig. 51—840362024 Capacitor Board Assembly**



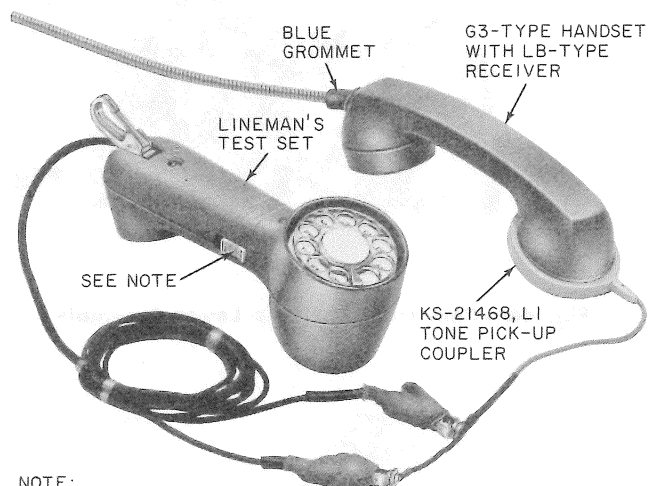
**Fig. 52—Housing and Mounting Plate Assembly**

- (2) Remove P-181678 BHM screw, and P-15E444 coverplate (Fig. 10 through 14) which secure handset cord to dial housing.
- (3) Loosen stay-hook screw and remove handset cord.

**4.26** To install handset, reverse procedure. Make connections per Table M.



**Fig. 53—Capacitor Board Assembly Mounted on 7A Clip**



NOTE:  
PLACE "TALK-MONITOR"  
SWITCH IN TALK POSITION.

**Fig. 54—KS-21468, List 1 Tone Pick-Up Coupler**

**TABLE M**

**HANDSET CONNECTIONS**

WIRE COLOR	CONNECT TO	
	ROTARY	TOUCH-TONE
W	TB2-2	TB2-7
R	TB2-3	TB2-3
BK	TB2-6	TB2-5
W	TB2-8	TB2-8

**Dial and Housing Assembly**

**The 70A and 35T3A TOUCH-TONE dials cannot be physically interchanged without changing the complete dial and housing assembly.**

**4.27 To remove dial and housing assembly:**

- (1) Remove handset.
- (2) Remove four 840157390 Red Patch nylon locking mounting screws (Fig. 10 through 14) and remove dial and housing assembly from cover.

**4.28 To install dial and housing assembly, reverse procedure.**

**Note:** Ensure that the four dial housing mounting screws are tight to prevent dial housings from becoming loose due to excessive vibration.

**4.29 To remove dial:**

- (1) Remove mounting screws and pull dial and housing assembly away from cover unit assembly.

**Note:** It will not be necessary to remove handset when removing dial.

- (2) Disconnect dial leads from TB2.
- (3) Loosen two mounting screws on sides of dial through access holes in housing.
- (4) Lift off dial.

**Note:** Before installing a new rotary dial, remove and discard the dust cover.

**4.30 To install dial, reverse procedure making sure that dial is properly seated on four locating pins. Make connections per Table N.****Fingerwheel (8S Dial MD)**

**Note:** The releasing hole has been partially plugged to deter tampering.

**4.31 To remove P-21F299 fingerwheel:**

- (1) Use a KS-16750 releaser and rap sharply to break out the remaining plastic below the blind releasing hole.
- (2) Rotate the fingerwheel in a clockwise direction as far as possible.
- (3) Insert KS-16750 releaser or paper clip in hole and push down to disengage fingerwheel clamp. Continue to rotate the fingerwheel in a clockwise direction.
- (4) When clamp spring releases, remove fingerwheel. Dial will return to normal.

**4.32 To install P-21F299 fingerwheel, place fingerwheel on dial with operator hole over the 9 position and rotate fingerwheel counterclockwise until spring clamp snaps in place.****Fingerwheel (8U or 8W Dial)****4.33 To remove 840151872 fingerwheel refer to 2.38.****4.34 To install 840151872 fingerwheel refer to 2.40.****P-23F361 Entrance Stop**

**4.35** The P-23F361 entrance stop (Fig. 55) is installed on the chute to minimize coin losses due to chute stuffing. When the coin release lever or knob is operated or a stuffing condition exists the entrance stop moves sideways and closes the coin slot.

**4.36** A prefabricated locking tab arrangement can be bent with a screwdriver to hold the upper plate assembly off normal. This will prevent customer coin deposits in newly installed coin telephone sets awaiting initial service connection, or those that are out of service which require further maintenance or repair.

**4.37 To replace entrance stop:**

- (1) Remove chute-totalizer.
- (2) Remove and retain two No. 6-32 by 5/32 RHM screws (P-218068) which secure the old entrance stop. Discard old entrance stop.

TABLE N

## DIAL CONNECTIONS

TYPE DIAL	WIRE COLOR	CONNECT TO	
		COIN FIRST	DIAL TONE FIRST OR POST PAY
Rotary	BL	TB2-9	TB2-9
	G	TB2-10	TB2-10
	W	TB2-2	TB2-2
	W	TB2-3	TB2-3
	Y	TB2-9	*
	Y	TB2-9	TB2-13
35T3A TOUCH- TONE Dial	G	TB2-4	TB2-4
	W	TB2-2	TB2-2
	R	TB2-5	TB2-5
	R-G	TB2-6	TB2-6
	BK	TB2-1	TB2-1
	O-BK	TB2-11	TB2-11
	O-R	TB2-12	TB2-12
	BL	TB2-3	TB2-3
	W-BL	TB2-7	TB2-7
	O-W	TB2-10	TB2-9
70A TOUCH- TONE Dial	V	TB2-10	TB2-13
	G	TB2-4	TB2-4
	W	TB2-2	TB2-2
	R	TB2-5	TB2-5
	R-G	TB2-6	TB2-6
	BK	TB2-1	TB2-1
	O-BK	TB2-11	TB2-11

TABLE N (Cont)

## DIAL CONNECTIONS

TYPE DIAL	WIRE COLOR	CONNECT TO	
		COIN FIRST	DIAL TONE FIRST OR POST PAY
70A TOUCH- TONE Dial (Cont)	O-R	TB2-10	TB2-10
	W-BL	TB2-7	TB2-7
	O-W	TB2-10	†
	V	TB2-10	TB2-13

\* TB2-9 on dial and housing assemblies P-90D274 and 840152227.

TB2-12 on dial and housing assemblies 841317241 and 841317258.

† TB2-9 on dial and housing assemblies 840155402 and 840155394.

TB2-12 on dial and housing assemblies 840346977 and 840347173.

- (3) Install the new entrance stop in the same location using the hardware retained.

**4.38** There should be no binding or rubbing of parts when coin release lever is operated fully and allowed to return to normal without force.

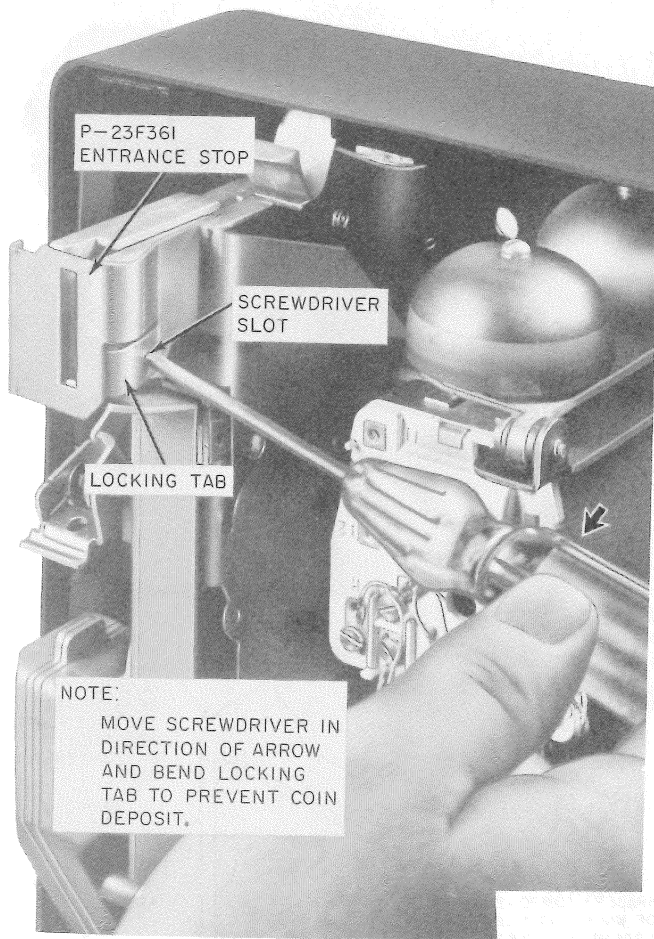
#### Information Plate and Plate Assemblies

**4.39** 1C- and 2C-type sets will be shipped from the factory or service center with an 840156319 information plate, indicating Coin-First service. When specified, these sets may be obtained wired for Dial-Tone-First service and equipped with an 840156327 information plate assembly. These plates are equipped with studs and are secured with thread-forming hex nuts.

**4.40** Studded plates for field replacement can be ordered as follows:

- **For Coin First Service**—840156319 Information Plate e/w two RM-900077371 thread-forming nuts\*





**Fig. 55—Operation of Entrance Stop**

- **For Dial-Tone-First Service**—840156327, Assembly, Information Plate e/w two RM-900077371 thread-forming nuts\*
- **For Post Pay Service**—840156087, Assembly, Information Plate e/w two RM-900077371 thread-forming nuts.\*

\*Use a 216B tool (3/8-inch socket wrench) to install or remove these nuts from studs.

**4.41** Some sets will not have holes drilled to accept studded information plates. Arrangements can be made locally to procure studless plates and affix them to the flat surface of an undrilled faceplate or panel phone cover.

**4.42** To install studless plates on coin telephone set:

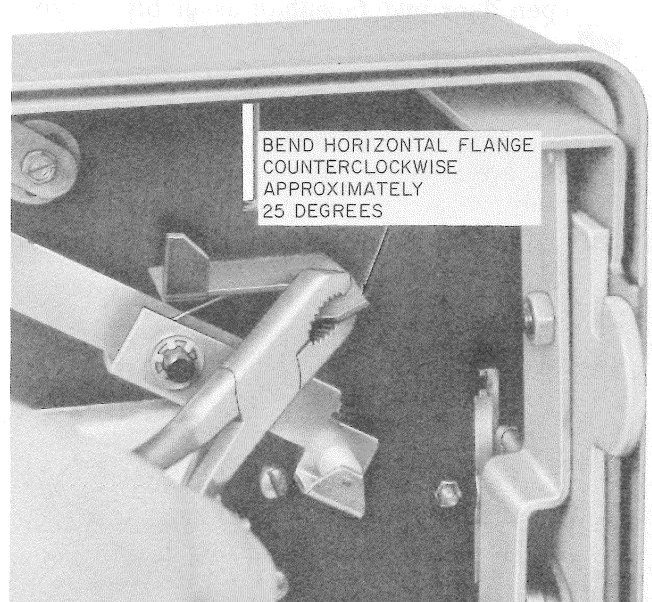
- (1) Clean faceplate or panel of dirt and grime using KS-19578, List 1 cleaning fluid.
- (2) Wipe dry with a different, lint-free cloth.
- (3) Apply 3M Company double sided industrial tape No. 9122 (or an approved equivalent) to the back surface of the information plate and trim neatly to size.
- (4) Peel off the back protective tape covering, carefully orient the plate on the faceplate or front cover (Fig. 2, 3 and 5) and press in place applying firm pressure to ensure complete adhesion.

#### **Modification of Cover Unit Chute Guide (Limit Stop)**

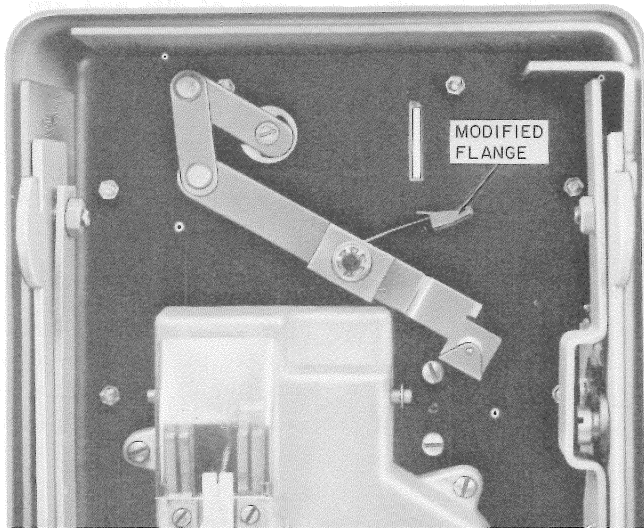
**4.43** If there is a clearance problem between chute and cover unit assembly on the 1-type set, bend the horizontal guide flange, located adjacent to the coin slot, as shown in Fig. 56 and 57.

#### **840360184 Knob and Shaft Assembly**

**4.44** The 840360184 knob and shaft assembly (Fig. 58) can be used to replace the lever-type coin release handle and shaft assembly in areas where vandalism causes serious damage to internal linkage and other chute actuating components.



**Fig. 56—Bending Chute Guide (Limit Stop)**



**Fig. 57—Chute Guide (Limit Stop)—After Modification**

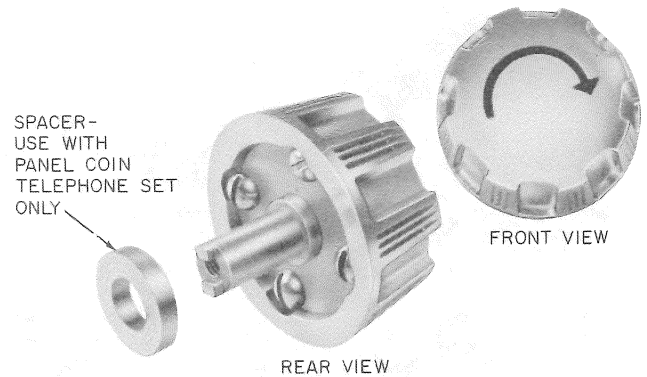
**4.45** A built-in clutch arrangement ensures that the chute actuating components are neither damaged nor destroyed if the knob is forcibly turned beyond its normal rotational limit.

**4.46** To replace the lever-type coin release with the knob-type (Fig. 59):

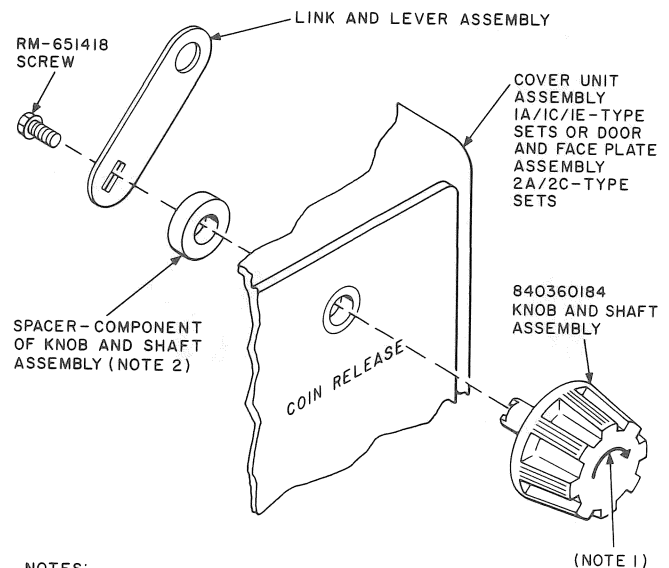
- (1) Remove cover unit assembly (1-type set) or open door and faceplate assembly (2-type set).
- (2) Remove and retain RM-651418 screw which secures link and lever assembly to coin release lever shaft. Remove lever and shaft assembly.
- (3) Insert knob and shaft assembly and orient arrow on knob as shown.
- (4) On a panel coin telephone set, the steel spacer must be used.

**Note:** Do not use spacer on a 1-type set.

- (5) Place link and lever assembly over rear of shaft and secure with the RM-651418 screw retained in (2).



**Fig. 58—840360184 Knob and Shaft Assembly**



**NOTES:**

1. INSTALL KNOB WITH ARROW IN THIS POSITION.
2. USE THIS SPACER ON 2A/2C-TYPE SETS ONLY.

**Fig. 59—Installation of 840360184 Knob and Shaft Assembly**

**840358725 Handle and Shaft Assembly**

**4.47** The 840358725 handle and shaft assembly (Fig. 2 and 3) can be replaced on the 1-type set as follows:

- (1) Remove cover unit assembly.

- (2) Repeat 4.46(2).
- (3) Insert handle and shaft assembly through faceplate and orient it per Fig. 2 and 3.
- (4) Repeat 4.46(5).
- (3) Loosen stay-hook screw and remove handset cord.
- (4) Remove four P-181658 FIL HD machine screws and remove P-83B752 dial and housing assembly from cover.

## 5. CONVERSIONS—1A/2A-TYPE COIN TELEPHONE SETS TO 1C/2C-TYPE

**5.01** The following components are required:

- (a) 20A1A chute-totalizer.
- (b) 31A coin chassis.
- (c) Dial and Housing Assembly.
  - P-90D274 (rotary dial)
  - 840346977 (70A TOUCH-TONE dial).

**5.02** A stamping kit is required for marking the cover unit assembly and housing and mounting plate assembly (1C-type); housing and door assembly (2C-type); coin chassis; and dial housing. The kit should be obtained locally and shall contain the following:

- Rotary or stick stamps with 1/4-inch characters for stamping P-90E403, P-90E444, P-90E451, P-90E503, P-90E544, P-90E551, 1C, 2C1, 2C2, and DTF
- Black and yellow *paste* ink with stamp pad
- Solvent
- Wiping cloth.

### 1A-Type

**5.03** *To convert a 1A1 to a 1C1 in the Coin First mode:*

- (a) Remove cover unit assembly, disconnect P1 and J1 and modify as follows:
  - (1) Disconnect handset leads from terminal board (TB2) on rear of dial housing.
  - (2) Remove P-181678 BHM screw, and P-15E444 cover plate which secure handset cord to dial housing.

(5) Install a P-90D274 dial and housing assembly using reverse procedure.

(6) Install handset cord and secure stay-hook. Install P-15E444 cover plate removed in

(2).

(7) Connect handset leads to TB2 per Table M.

(8) Remove 1A1 marking from cover and stamp P-90E403 (black), P-90E444 (chrome), or P-90E451 (moss green) in same relative position.

(b) Modify housing and mounting plate assembly as follows:

(1) Disconnect P2 from J2 and remove coin chute totalizer assembly.

(2) Disconnect (BK) and (Y) leads from coin relay and carefully pull leads through guide hole in hopper.

(3) Loosen chassis mounting captive screw.

(4) Pull chassis out at bottom, slide down, and remove.

(5) Install a new 31A coin chassis using reverse procedure.

**Note:** When installing chassis, dress inside wire behind chassis, allowing for sufficient wire to be connected to TB1 from right side as viewed from front of set.

(6) Thread (BK) and (Y) leads of chassis through eyelet on coin hopper. Connect (BK) lead to terminal 3 and (Y) lead to terminal G of coin relay.

(7) Install new 20A1A chute-totalizer, or substitute a 1A totalizer on original chute and connect P2 to J2. **Ensure that the mode switch on the totalizer is in the CF position.**



TABLE O

**DIAL HOUSING CONNECTIONS  
(FOR CONVERTING 1A/2A-TYPE SETS TO 1C/2C-TYPE SETS)**

TYPE DIAL	WIRE COLOR	CONNECT TO		OTHER END CONNECTED TO
		COIN FIRST MODE	DIAL TONE FIRST MODE	
Rotary	Y	TB2-9	TB2-13	DON-2 contact on 8S Dial
	Y	TB2-9	TB2-9	DON-2 contact on 8S Dial
	G	TB2-13	*	SH3
TOUCH-TONE Dial	V	TB2-10	TB2-13	t contact on 35T3A dial
				cf contact on 70A dial
	O-W	TB2-10	TB2-9	s contact on 35T3A dial
			†	cf contact on 70A dial
	G	TB2-13	TB2-9	SH3

\* TB2-9 on dial and housing assembly P-90D274.

TB2-12 on dial and housing assembly 841317241.

† TB2-9 on dial and housing assemblies 840155402 and 840155394.

TB2-12 on dial and housing assemblies 840346977 and 840347173.

(8) Remove 1A marking from top of vault compartment and stamp 1C in same relative position.

(c) Verify that wire connections correspond to Tables N, O, and P.

(d) Connect P1 to J1 and install cover unit assembly.

**5.04 To convert a 1A1 to a 1C1 in the Dial Tone First (DTF) mode:**

(a) Remove cover unit assembly, disconnect P1 from J1 and modify as follows:

(1) Repeat steps (1) through (6) in 5.03(a).

(2) Transfer wires on TB2 per Table O.

(3) Remove 1A1 stamping from the cover and stamp P-90E403 (black), P-90E444, (chrome), or P-90E451 (moss green) in the same relative position.

(4) Stamp DTF on dial housing above part number.

(b) Modify housing and mounting plate assembly as follows:

(1) Repeat steps (1) through (6) in 5.03(b).

(2) Install new 20A1A chute-totalizer or substitute a 1A totalizer on original chute and connect P2 to J2. **Ensure that the mode switch on the totalizer is connected in the DTF position.**

(3) Reconnect wires on TB3 per Table P.

TABLE P

**COIN CHASSIS CONNECTIONS  
(ROTARY AND "TOUCH-TONE" SETS)**

CONNECT TO	WIRE COLOR	
	COIN FIRST	DTF MODE
TB3-1	G	R
TB3-2	G-BK	G
TB3-3	R, S-R	G-BK
TB3-4	BL, S-W	BK
TB3-5	G-W	—
TB3-6	V	BL, V-O
TB3-7	BK	—
TB3-8	—	S-R, R-G
TB3-9	—	W-BR
Insulate and store	W-BR, V-O, R-G	S-W, G-W, V

(4) Remove 1A marking from top of vault compartment and stamp 1C in the same relative position.

(5) Stamp DTF on coin chassis adjacent to marking 31A.

(c) Connect P1 to J1 and install cover unit assembly.

**5.05 To convert a 1A2 to a 1C2 in the Coin First mode**

(a) Remove cover unit assembly, disconnect P1 from J1 and modify as follows:

(1) Repeat steps (1) through (3) in 5.03(a).

(2) Remove four P-181658 Fillister HM screws and remove P-26E153 dial and housing assembly from cover.

(3) Install an 840346977 dial and housing assembly (with 70A dial) using reverse procedure.

(4) Repeat steps (6) and (7) in 5.03(a).

(5) Remove 1A2 marking from cover and stamp P-90E503 (black), P-90E544 (chrome), or P-90E551 (moss green) in same relative position.

(6) To modify housing and mounting plate assembly repeat 5.03(b).

(b) Verify that wire connections correspond to Tables N, O, and P.

(c) Connect P1 to J1 and install cover unit assembly.

**5.06 To convert a 1A2 to a 1C2 in the DTF mode**

(a) Remove cover unit assembly, disconnect P1 from J1 and modify as follows:

(1) Repeat steps (1) through (3) in 5.03(a).

(2) Repeat steps (2) and (3) in 5.05(a).

(3) Repeat steps (6) and (7) in 5.03(a).

(4) Transfer wires on TB2 per Table O.

(5) Remove 1A2 marking from the cover and stamp P-90E503 (black), P-90E544 (chrome), or P-90E551 (moss green) in the same relative position.

(6) Stamp DTF on dial housing above part number.

(b) To modify housing and mounting plate assembly repeat 5.04(b).

(c) Connect P1 to J1 and install cover unit assembly.

**2A-Type**

**5.07 To convert a 2A1 to a 2C1 in the Coin First mode:**

(a) Open door and faceplate assembly, disconnect P1 from J1 and modify as follows:

(1) Repeat steps (1) through (7) in 5.03(a).

(2) Repeat steps (1) through (7) in 5.03(b).

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- (3) Remove 2A1 marking from top of vault compartment and stamp 2C1 in same relative position.
- (b) Verify that wire connections correspond to Tables N, O, and P.
- (c) Connect P1 to J1 and close door and faceplate assembly.

### **5.08    *To convert a 2A1 to a 2C1 in the DTF mode:***

- (a) Open door and faceplate assembly, disconnect P1 from J1 and modify as follows:
  - (1) Repeat steps (1) through (7) in 5.03(a).
  - (2) Transfer wires on TB2 per Table O.
  - (3) Stamp DTF on dial housing above part number.
  - (4) Repeat steps (1) through (6) in 5.03(b).
  - (5) Install new 20A1A chute-totalizer or substitute a 1A totalizer on original chute and connect P2 to J2. ***Ensure that the mode switch on the totalizer is in the DTF position.***
  - (6) Reconnect wires on TB3 per Table P.
  - (7) Remove 2A1 marking from top of vault compartment and stamp 2C1 in the same relative position.
  - (8) Stamp DTF on coin chassis adjacent to marking 31A.
- (b) Connect P1 to J1 and close door and faceplate assembly.

### **5.09    *To convert a 2A2 to a 2C2 in the Coin First mode:***

- (a) Open door and faceplate assembly, disconnect P1 from J1 and modify as follows:
  - (1) Disconnect handset leads from terminal board (TB2) on rear of dial housing.
  - (2) Remove P-181678 BHM screw, and P-15E444 cover plate which secure handset cord to dial housing.

- (3) Loosen stay-hook screw and remove handset cord.

- (4) Remove four P-181658 FIL HD machine screws and remove P-26E153 dial and housing assembly from cover.

- (5) Install an 840346977 dial and housing assembly (with 70A dial) using reverse procedure.

- (6) Install handset cord and secure stay-hook. Install P-15E444 cover plate removed in (2).

- (7) Connect handset leads to TB2 per Table M.

- (8) Repeat steps (1) through (7) in 5.03(b).

- (9) Remove 2A2 marking from top of vault compartment and stamp 2C2 in the same relative position.

- (b) Verify that wire connections correspond to Tables N, O, and P.

- (c) Connect P1 to J1 and close door and faceplate assembly.

### **5.10    *To convert a 2A2 to a 2C2 in the DTF mode:***

- (a) Open door and faceplate assembly disconnect P1 from J1 and modify as follows:
  - (1) Repeat steps (1) through (7) in 5.09(a).
  - (2) Transfer wires on TB2 per Table O.
  - (3) Stamp DTF on dial housing above part number.
  - (4) Repeat steps (1) through (6) in 5.03(b).
  - (5) Install new 20A1A chute-totalizer or substitute a 1A totalizer on original chute and connect P2 to J2. ***Ensure that the mode switch on the totalizer is in the DTF position.***
  - (6) Reconnect wires on TB3 per Table P.

(7) Remove 2A2 marking from top of vault compartment and stamp 2C2 in the same relative position.

(8) Stamp DTF on coin chassis adjacent to marking 31A.

(b) Connect P1 to J1 and close door and faceplate assembly.

#### 5.11 *To convert a 1C/2C-type set from CF to DTF or DTF to CF:*

(a) Connect leads per Tables O and P.

(b) Move slide switch on totalizer to correct position (CF or DTF).

(c) Check information plate and ensure that it corresponds to the type service being offered.

### 6. MANUAL EXTENSION STATION

**6.01** A manual extension station can be used with a 1C/2C-type and 1E3 sets using a 500C desk set equipped with a D-180405 Kit of Parts or a 554-type wall set equipped with a D-180406 Kit of Parts (Section 506-100-108). Do not use a kit-equipped extension set with a 1A/2A-type or 1E1 set.



*Not more than one manual extension station can be electrically associated with a coin set.*

### 7. CLEANING AND TOUCH-UP

**7.01** When necessary, the external surface of the coin telephone set may be cleaned with KS-7860 petroleum spirits or a suitable liquid wax such as Johnson's No. 7700 cleaning and polishing wax emulsion.

**Warning:** *Use safety precautions while using highly flammable KS-7860 petroleum spirits.*

**7.02** An overspray laquer, available in 12-ounce aerosol cans can be used for touch up work on 1-type coin telephone set finishes, with texturized vinyl paint.

- KS-21462, List 1 (Black -03)

- KS-21462, List 2 (Moss Green -51).

**7.03** Apply per label instructions on can.



*After all maintenance is completed, refer to Part 3 and verify if the coin telephone set is working correctly.*

### 8. CONNECTIONS

**8.01** Refer to Fig. 60 through 70 for connecting diagram.

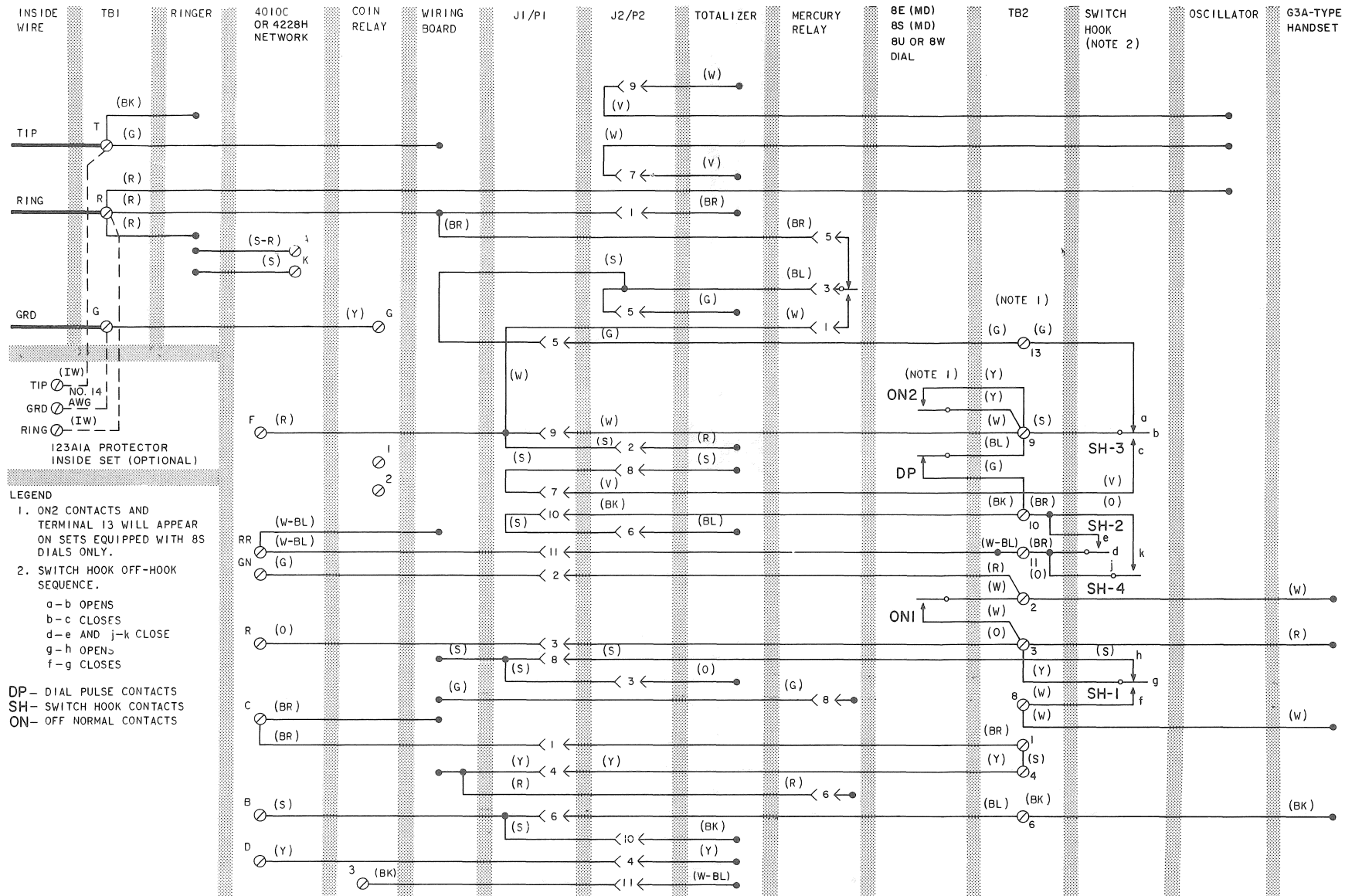


Fig. 60—1A1 or 2A1 Coin Telephone Set—Connections





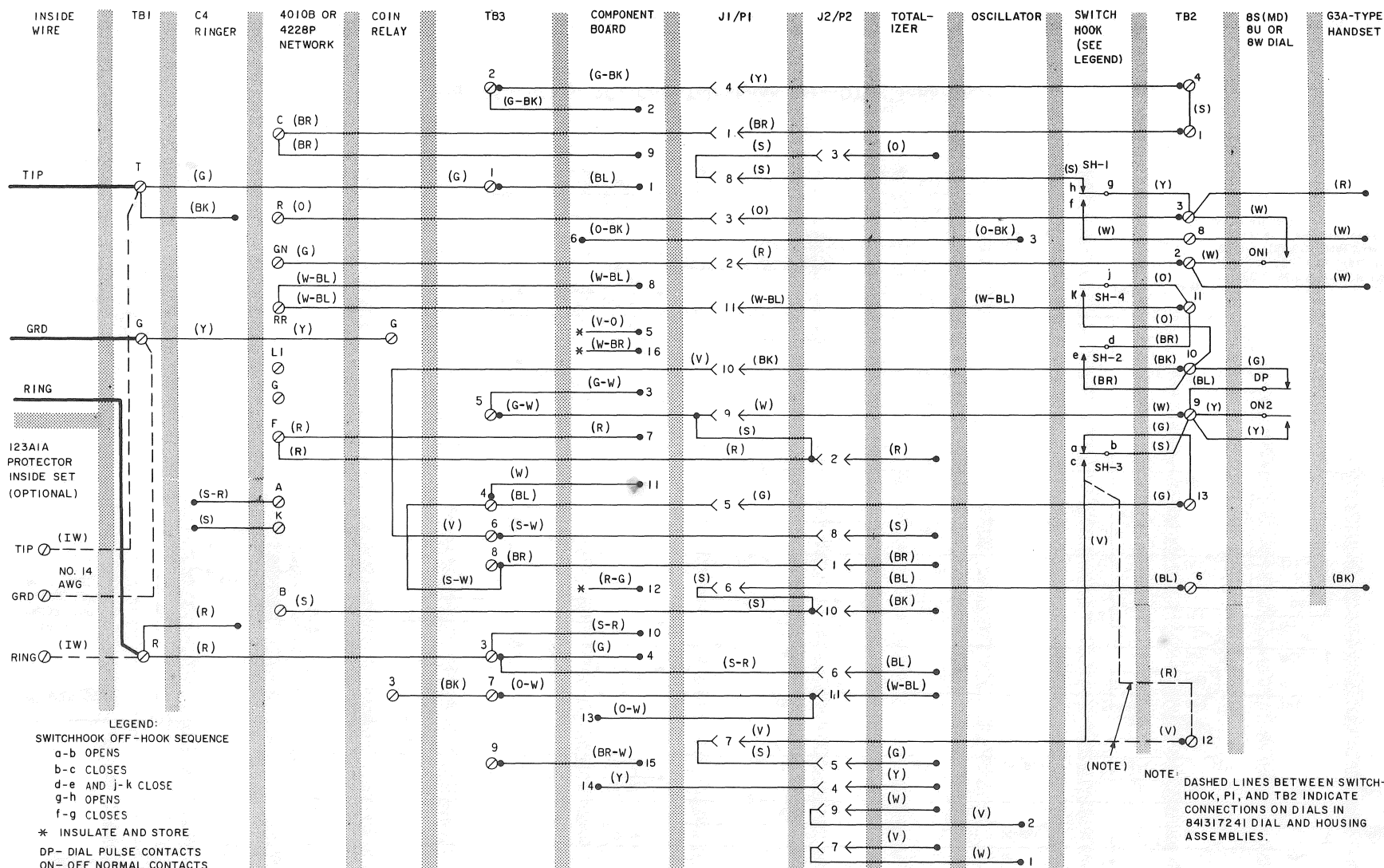


Fig. 63—1C1 or 2C1 Coin Telephone Set—CF Connections



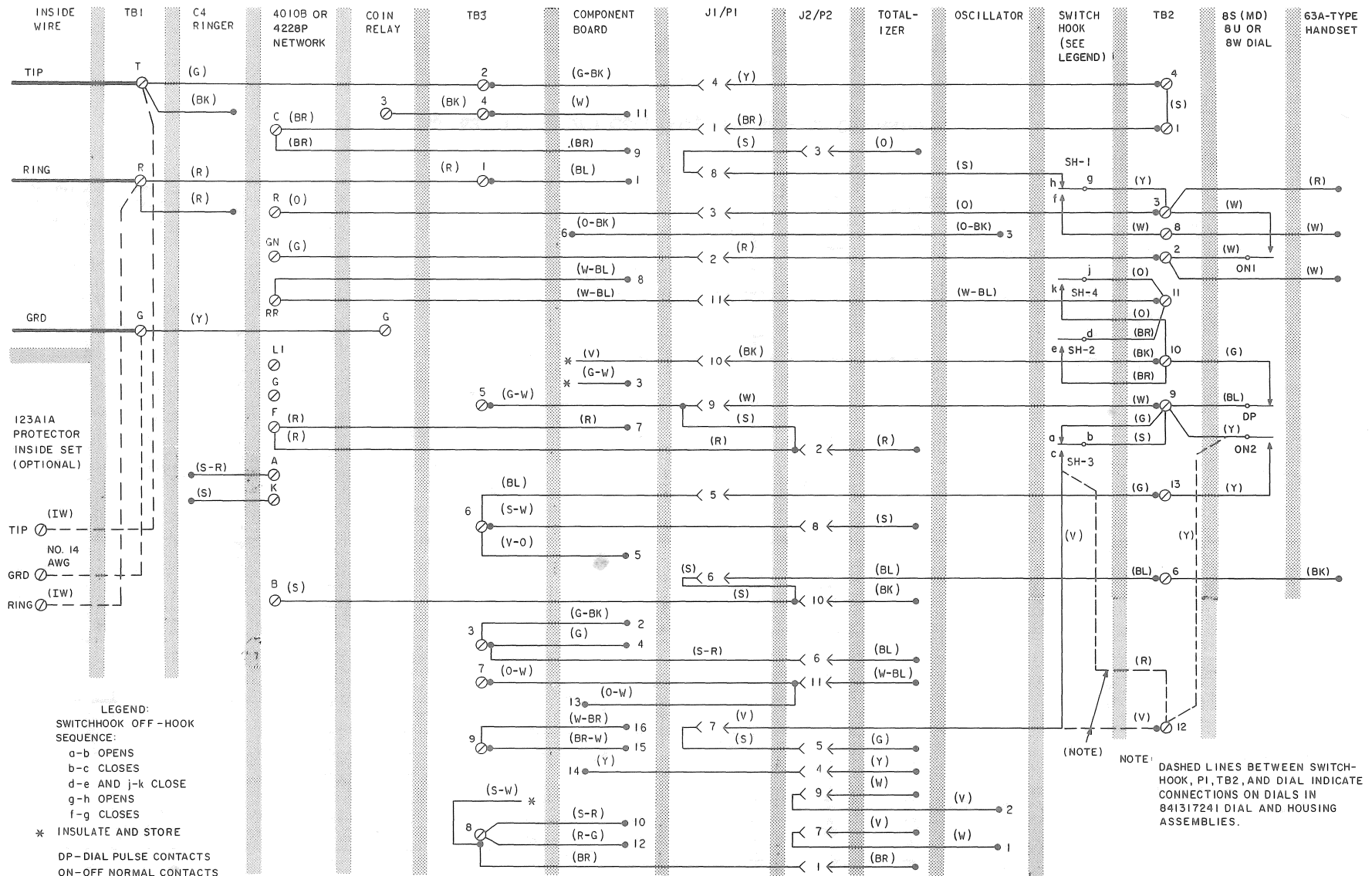


Fig. 64—1C1 or 2C1 Coin Telephone Set—DTF Connections

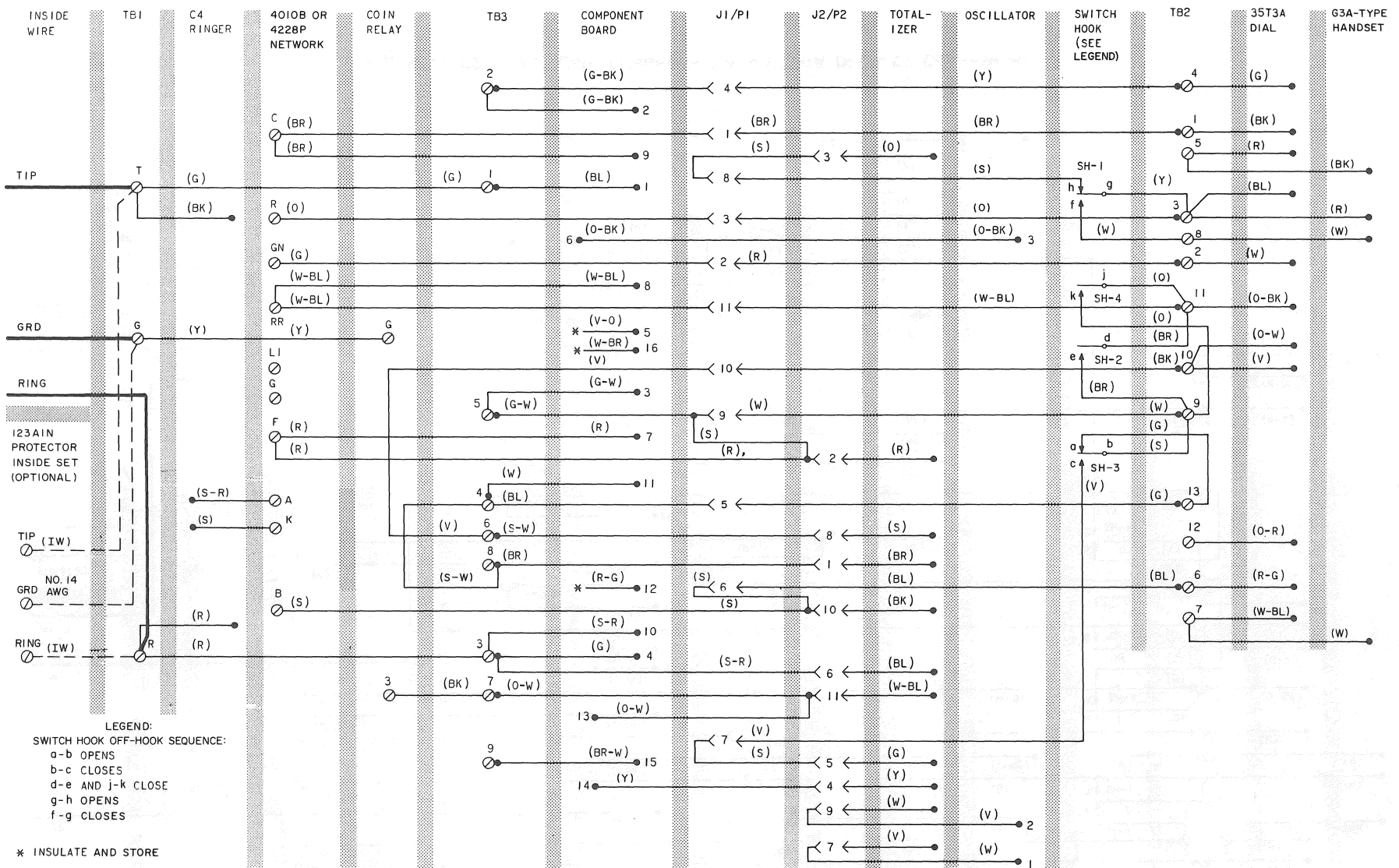


Fig. 65—1C2 or 2C2 Coin Telephone Set with 35T3A Dial—CF Connections

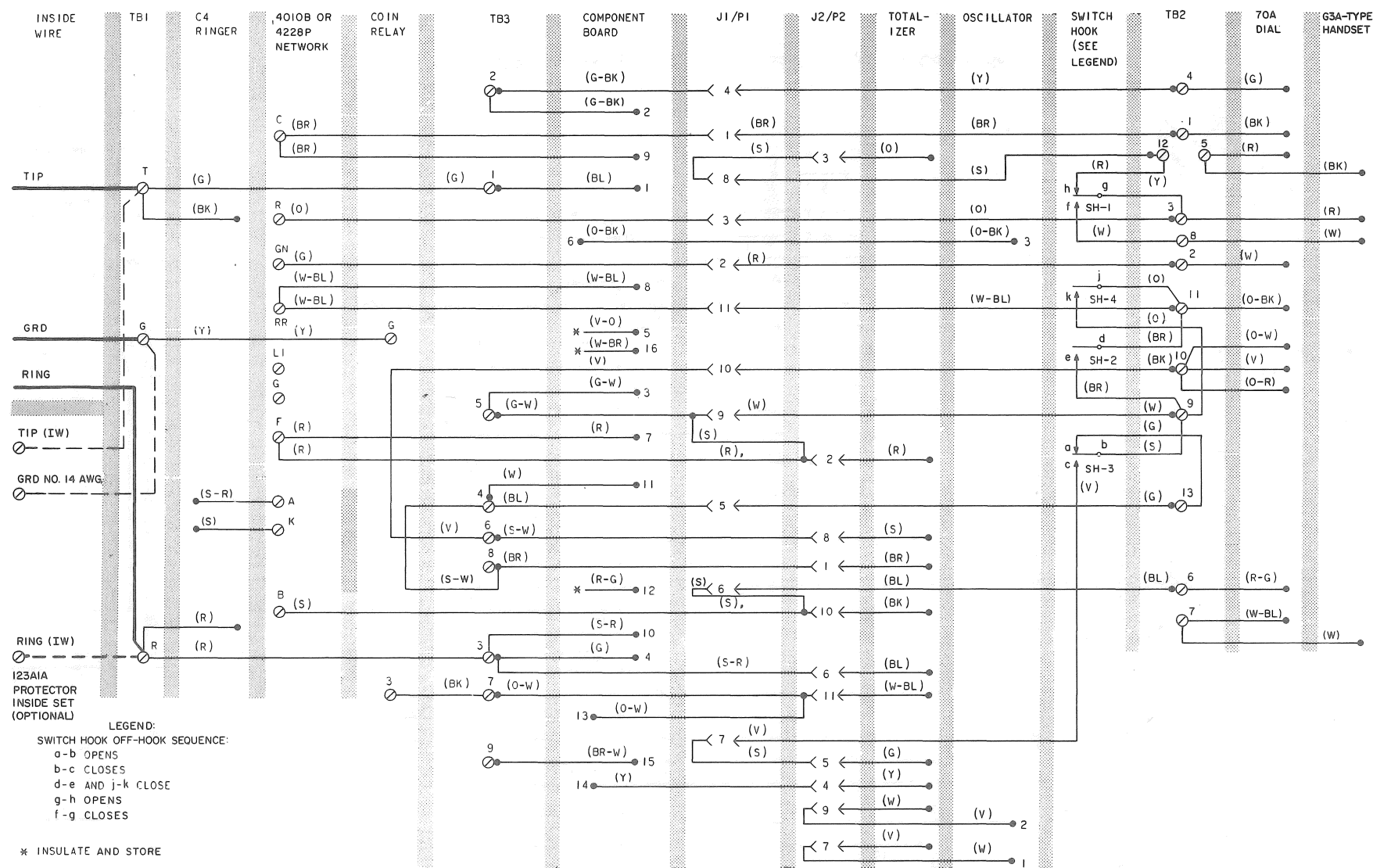


Fig. 66—1C2 or 2C2 Coin Telephone Set with 70A Dial—CF Connections

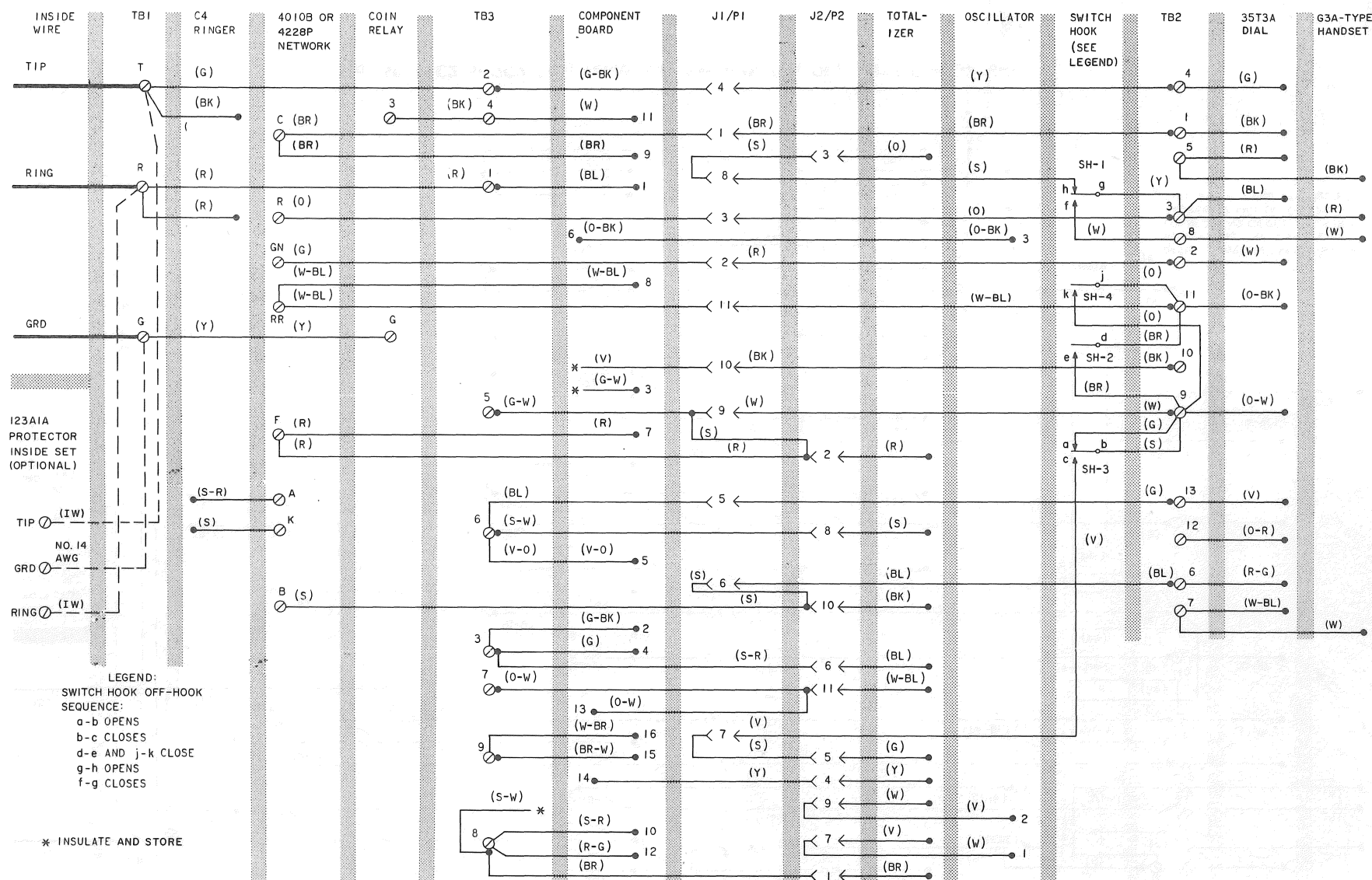


Fig. 67—1C2 or 2C2 Coin Telephone Set with 35T3A Dial—DTF Connections

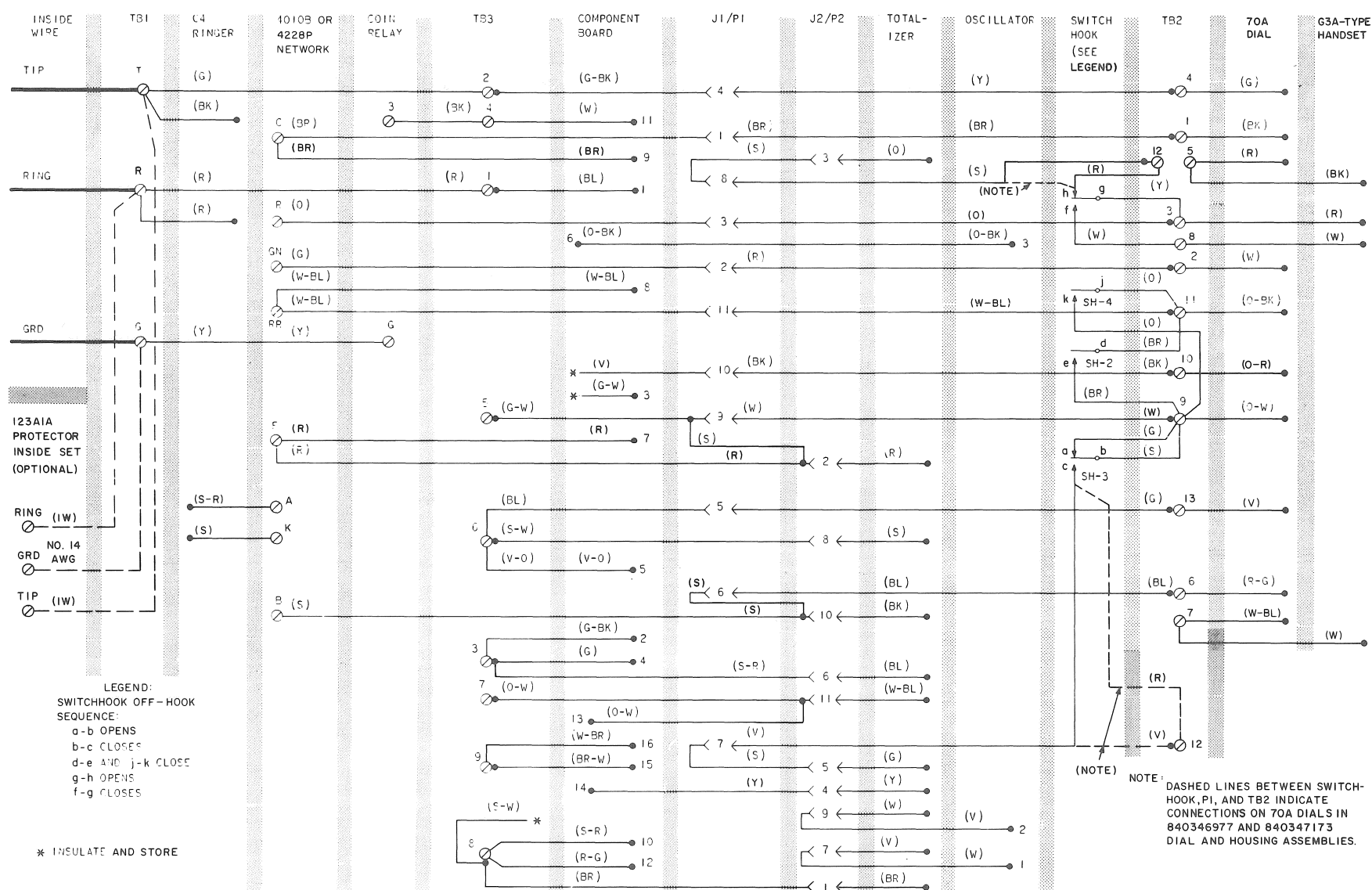


Fig. 68—1C2 or 2C2 Coin Telephone Set with 70A Dial—DTF Connections

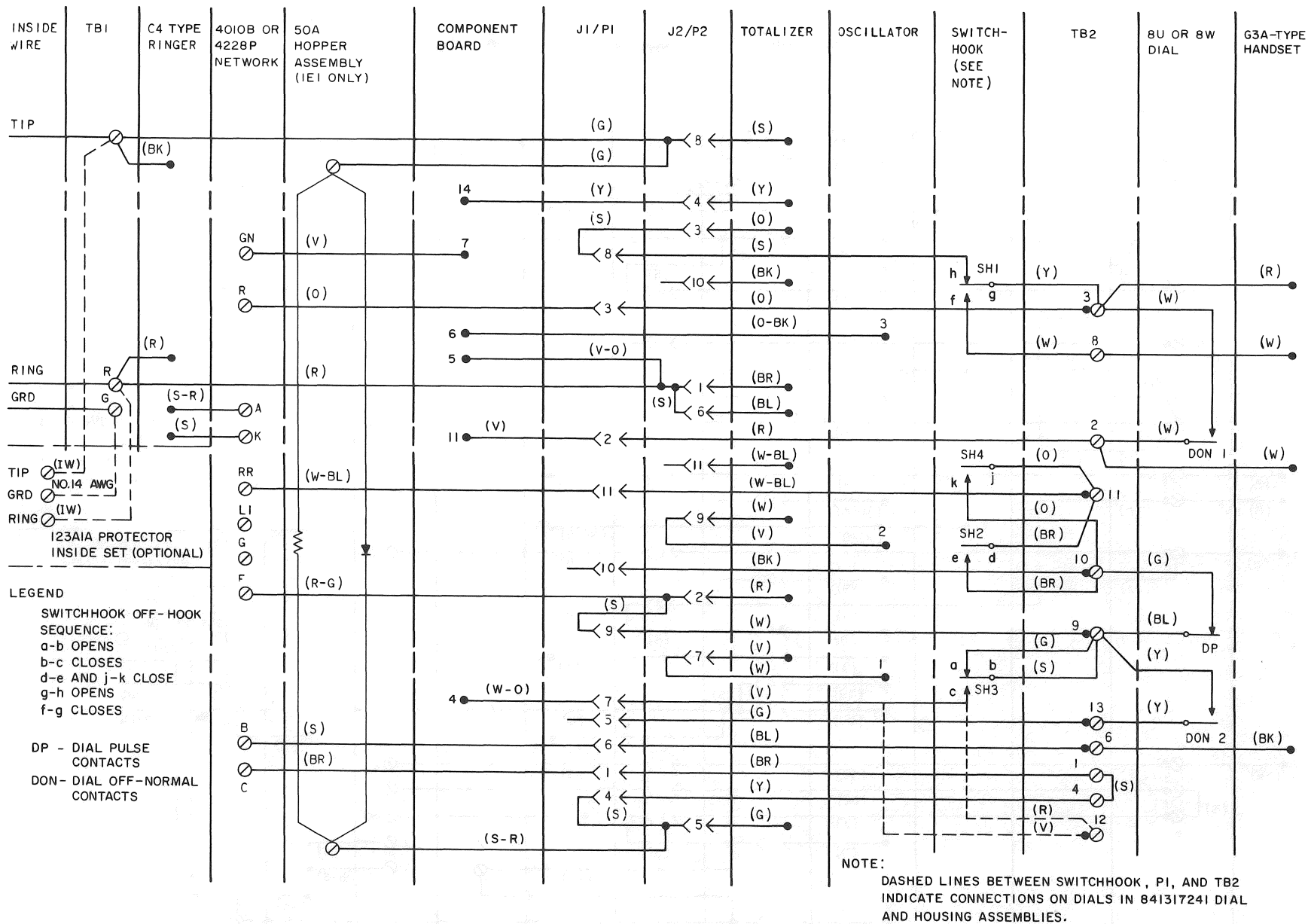


Fig. 69—1E1 Coin Telephone Set—Connections

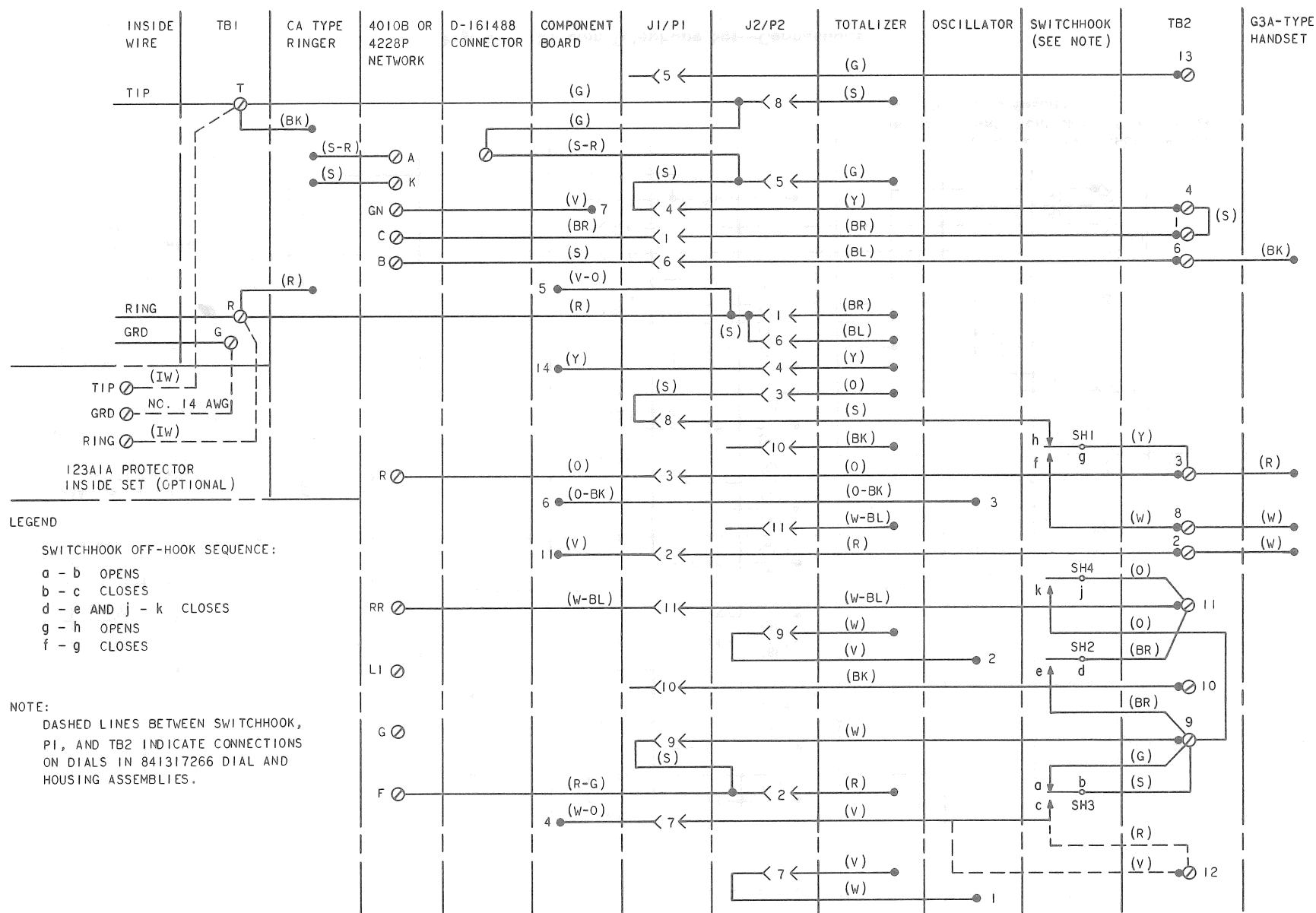


Fig. 70—1E3 Coin Telephone Set—Connections











